narrow bands. In the far ultraviolet they become continuous. Discrete spectra of the rare earth ions are due to quasi-forbidden transitions. Unlike other elements, the rare metal salts are also luminescent in solution, maintaining the solid state spectrum. Luminescent analysis is unsurpassed in accuracy, and can be used for quantitative determinations. Concerning the luminescence of crystallophosphors activated by rare earth elements, the authors note that rare earths are used as minute additives to oxides, sulfides, fluorides, sulfates, silicates, phosphates, tungstates and molybdates. Their ionic radius should be commensurate with that of the activator. Here too, luminescence is proportional to content and can be used for the quantitative determination of the rare earths. With respect to the luminescence of organic internal complexes of the rare earth elements, the photoluminescent spectra of these compounds are basically no different from those of the simple salts of these elements. The energy distribution depends on the nature of the organic ligand. Sometimes ions show fluorescence only under certain conditions, mostly at low temperatures (except Eu). This is a sensitive method permitting the determination of 10^{-4}% Eu and 10^{-3}% Tb. Orig. art. has: 6 figures and 1 table.

ASSOCIATION: In-t geokhimii i analit. khimii im. V.I. Vernadskogo AN SSSR (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

L 17599-65
ACCESSION NR: AP4049247 O

SUBMITTED: 00 ENCL: 00 SUB CODE: IC, OP

NO REF SOV: 051 OTHER: 074

Card 3/3

KARYAKIN, A.V.; CHMUTINA, L.A.

Spectral investigation of dye salt solutions in the presence of biopolymers. Biofizika 9 no.4:515-518 '64. (MIRA 18:3)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo AN SSSR, Moskva i Politekhnicheskiy institut, Volgograd.

KARYAKIN, A.V.; CHMUTINA, L.A.

Influence of environmental pH on the interaction of acridine orange with glycinin. Biofizika 9 no.6:666-670 '64.
(MIRA 18:7)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo AN SSSR, Moskva i Politekhnicheskiy institut, Volgograd.

KARYAKIN, A.V.; [illegible], A.V.

Determination of the water content of tributyl phosphate from the absorption spectra in the near infrared. Zhur.anal.khim. 19 no.10: 1234-1237 '64. (MIRA 17:12)

1. V.I.Vernadsky Institute of Geochemistry and Analytical Chemistry, U.S.S.R. Academy of Sciences, Moscow, and Volgograd Polytechnical Institute.

KARYAKIN, A.V.; PETROV, A.V.

Study of the water state and the determination of its content in oxygen-containing compounds in the presence of hydrogen chloride from the absorption spectra in the near infrared region. Zhur. anal. khim. 19 no.12:1486-1494 '64 (MIRA 18:1)

1. V.I.Vernadsky Institute of Geochemistry and Analytical Chemistry Academy of Sciences of the U.S.S.R., Moscow, and Volgograd Polytechnic Institute.

KARYAKIN, A.V., doktor khim.nauk

Conference on Modern Methods of Analytical Chemistry. Vest. AN SSSR 34 no. 1:84-86 Ja '64. (MIRA 17:5)

YUKHNEVICH, G.V.; KARYAKIN, A.V.

Relationship between the valence vibration frequencies of water molecules and the hydrogen bonding energy. Dokl. AN SSSR 156 no. 3:681-684 '64. (MIRA 17:5)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo AN SSSR. Predstavleno akademikom A.P.Vinogradovym.

RYABCHIKOV, D.I., otv. red.; ALIMARIN, I.P., red.; PALEY, P.N., red.; BORISOVA, L.V., red.; ZOLOTOV, Yu.A., red.; SENYAVIN, M.M., red.; KARYAKIN, A.V., red.; VOLYNETS, M.P., re

[Modern methods of analysis; methods of studying the chemical composition and structure of substances. On the seventieth birthday of Academician A.P.Vinogrado] Sovremennye metody analiza; metody issledovaniia khimicheskogo sostava i stroeniia veshchestv. K semidesiatiletiiu akademika A.P.Vinogradova. Moskva, Nauka, 1965. 333 p. (MIRA 18:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii. 2. Chlen-korrespondent AN SSSR (for Ryabchikov).

L 53825-65
ACCESSION NR: AP5013863 UR/0368/65/002/004/0364/0366

AUTHOR: Karyakin, A. V.; Kaygorodov, V. A.; Akhmanova, M. V. 61

TITLE: Investigation of the two-step method of spectrum excitation

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 4, 1965, 364-366

TOPIC TAGS: spectral analysis, mineral analysis, laser application

ABSTRACT: This is a continuation of an earlier work by the authors (ZhAKh, v. 20, 145, 1965), where it was shown that the two-step method of spectrum excitation offers certain advantages for emission spectroscopy. The aim of the present work was to ascertain the possibility of applying the two-step method of excitation for a quantitative spectral analysis of geological objects. The apparatus for the investigations made use of a neodymium-glass laser and was described in the earlier paper. The secondary spectral source was an a-c carbon arc. The spectra were photographed with an ISP-22 spectrograph. The samples were made of amphibole diluted with copper oxide and potassium bromide, pressed into tablets. The laser beam evaporated from the sample a crater with a diameter up to 1 mm and with a depth up to 1.5 mm. The density of the spectral line was investigated as a function of the distance between

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L 53825-65

ACCESSION NR: AP5013863

the sample and the discharge axes, of the pump energy, of the background, and of the arc current. An estimate of the reproducibility of the analysis was obtained by checking the results of ten measurements, which were reproducible within 5—20%. The accuracy of the analysis was tested against samples with known content, determined by chemical means. The results confirm that a laser with a radiation energy of 10^{-20} J can be used for quantitative spectral analysis of geological objects and that the two-step method of spectrum excitation eliminates the influence of the processes occurring on the electrodes. Orig. art. has: 3 figures and 1 table. [02]

ASSOCIATION: None

SUBMITTED: 10Nov64 ENCL: 00 SUB CODE: 02, EC

NO REF SOV: 002 OTHER: 002 ATD PRESS: 4023

Card 2/2

YUKHNEVICH, G.V.; KARYAKIN, A.V.; PETROV, A.V.

Vibrational spectra of water in solutions. Zhur. prikl. spekt. 3 no. 2:142-150 Ag '65. (MIRA 18:12)

1. Submitted Sept. 5, 1964.

L 40808-65 EWT(m)/EWP(j)/T Pc-4/Pi-4 RPW/RM

ACCESSION NR: AP5008361 S/0190/65/007/003/0389/0393

AUTHORS: Karyakin, A. V.; Grishin, G. V.; Kurykin, B. D.

TITLE: Infrared study of photodegradation of polyvinylchloride

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 3, 1965, 389-393

TOPIC TAGS: polyvinylchloride, decomposition, IR spectroscopy / DRSh 500 lamp, UR 10 spectrometer, SF 2M spectrometer

ABSTRACT: Films of polyvinylchloride were irradiated with a quartz-mercury DRSh-500 lamp. By fastening the films in front of a plane reflecting mirror in a system with spherical reflecting mirror and lenses, photodegradation was effected in four hours. The use of a heat filter permitted the entire process to be carried out at room temperature. To insure uniform irradiation, the film was turned constantly during exposure (at 2 r.p.m.). Measurements in the IR region of the spectrum were made from 4000 to 400 cm^{-1} on a UR-10 spectrometer, and in the visible range from 400 to 750 mμ on an SF-2M spectrometer. The films, 15-20 mμ thick, were made from a 4-5% solution of tetrahydrofuran on glass plates. Homogeneous and transparent films were obtained only by using small crystallizers with ground glass tops having small openings in the center for

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ACCESSION NR: AF5008361

slow evaporation. IR absorption spectra indicate greatest change in the film during monochromatic irradiation at 313 and 365 mμ, and the least during irradiation by the mercury lines 405 and 436 mμ. Results show that the primary stage of breakdown is elimination of HCl and the formation of unsaturated bonds. Oxidation with formation of hydroperoxides follows. Many organic stabilizers /5 inhibit the reaction in varying degrees. The best inhibitors are phenoles and, apparently, ketones. Resorcin dibenzoate is one of the best of the phenoles. Some amines are good, some poor. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo (Institute of Geochemistry and Analytical Chemistry)

SUBMITTED: 03Apr64 ENCL: 00 SUB CODE: OC, MT

NO REF SOV: 004 OTHER: 003

Card 2/2

L 54863-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

ACCESSION NR: AP5016502 UR/0190/65/007/006/0998/0999
678.01:53+678.744

AUTHOR: Konstantinopol'skaya, M. B.; Kanevskaya, Ye. A.; Karyakina, M. I.; Berestneva, Z. Ya.; Kargin, V. A.

TITLE: Structure of butyl methacrylate—methacrylic acid copolymer

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 6, 1965, 998-999, and insert facing p. 959

TOPIC TAGS: butyl methacrylate, methacrylic acid, copolymer, elastomer structure, ribbon like structure, varnish coating, varnish coating structure

ABSTRACT: An earlier study (Kalashnikova, V. G., M. V. Kazhdan, Z. Ya. Berestneva, and V. A. Kargin. Vysokomolekulyarnyye soyedineniya, v. 6, no. 5, 1964, 906-909) showed that certain elastomers are ordered systems whose structure consists of ribbons 1000 Å thick. In this study an attempt was made to show that in polymers, in general, ribbon-like structures are associated with the high-elastic state. The experiments were conducted with the straight-chain amorphous butyl methacrylate-methacrylic acid copolymer BMK-5 (carbonyl group content, 5%; glass temperature (T_g), 40C). Electron microscopic investigation of thin BMK-5 films heated at

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L 14863-63

ACCESSION NR: AP5016502

2

80--180C for 2 hr and rapidly cooled revealed the formation of ribbon structures. It was concluded that ribbon-like structures are, apparently, inherent in all polymers in the high-elastic state, provided that their decompositon temperature is much higher than their Tg. Study of the morphology of surfaces of BMK-5-based varnish films treated in a similar manner yielded analogous results. Thus, structure formation in these films takes place at temperatures above the polymer's Tg and results in randomly distributed ribbon-like structures. Investigation of the structure of varnish coatings in the course of their aging at 45C for two days showed that aging at comparatively low temperatures does not affect the structure of the coatings but favors the development of defects on the film surface. However, prolonged aging could also cause structural changes and adversely affect the properties of the coatings. Orig. art. has: 5 figures. [BO]

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute); Gosudarstvennyy nauchno-issledovatel'skiy proyektnyy institut lako-krasochnoy promyshlennosti (State Design and Planning Scientific Research Institute of the Varnish and Paint Industry)

SUBMITTED: 07Jul64 ENCL: 00 SUB CODE: MT, OC

NO REF SOV: 003 OTHER: 000 ATD PRESS: 4031

Card 2/2 9m

L 61846-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4/Ps-4 JAJ/RM/WW

ACCESSION NR: AP5018426 UR/0190/65/007/007/1171/1172 27
678.01:54+678.746

AUTHOR: Karyakin, A. V.; Puntikova, A. I. 26 B

TITLE: Photodegradation of polystyrene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 7, 1965, 1171-1172

TOPIC TAGS: polystyrene photodegradation, ultraviolet irradiation, oxidation inhibition

ABSTRACT: The object of the work was to determine the effect of ultraviolet radiation on the degradation of polystyrene and to refine the mechanism of the processes involved by use of infrared spectroscopy. Measurements in the IR region (see Fig. 1 of the Enclosure) were made at 400-4000 cm^{-1}, and in the UV region, at 220-800 mμ, using transparent, homogeneous films 70-80 μ thick prepared from a 10% solution of polystyrene in benzene. The data showed that UV irradiation induces photodegradation processes, and consequently stabilizing agents should be introduced into polystyrene. The stabilizing effect of various inhibitors of oxidizing processes and the effect of luminescent substances used as stabilizers of polymers were determined

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L 61846-65

ACCESSION NR: AP5018426

from the ratio of the optical density of the irradiated film sample (D_{irr}) to the optical density of the nonirradiated sample (D_{nonirr}) for the 1745 cm^{-1} absorption band. The strongest stabilizing effect was displayed by benzophenone derivatives, which have a very high absorption coefficient in the ultraviolet (at 200-400 mμ). Resorcinol dibenzoate, 2-hydroxy-4-alkoxybenzophenone, 4-methoxy-o-hydroxybenzophenone, resorcinol disalicylate, and 2-hydroxy-4-methoxybenzophenone were found to be the best stabilizers for polystyrene exposed to ultraviolet radiation. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 28Jul64 ENCL: 00 SUB CODE: GC, OP

NO REF SOV: 001 OTHER: 000

Card 2/3

L 61846-65

ACCESSION NR: AP5018426

ENCLOSURE: 01

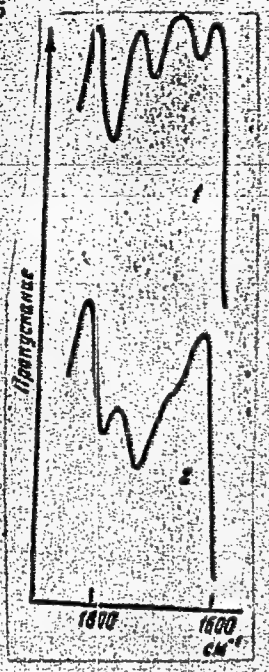

Fig. 1. IR absorption spectra of polystyrene: 1 - before irradiation; 2 - after 20-hr irradiation

Card 3/3

ALIMARIN, I.P.; ZOLOTOV, Yu.A.; KARYAKIN, A.V.; PETROV, A.V.; SUKHANOVSKAYA, A.I.

Extraction of thallium (III) compounds from chloride solutions. Zhur. neorg. khim. 10 no.2:524-530 F '65. (MIRA 18:11)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo AN SSSR i Volgogradskiy politekhnicheskiy institut. Submitted May 5, 1964.

L 52977-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG

ACCESSION NR: AP5009952 UR/0078/65/010/004/0986/0991

AUTHOR: Petrov, A. V.; Karyakin, A. V.; Marunova, K. V.

TITLE: Mechanism of extraction of rhenium by tributylphosphate

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 4, 1965, 986-991

TOPIC TAGS: tributylphosphate, rhenium, hydrochloric acid, extraction, spectrophotometry

ABSTRACT: Changes in the P-O-C and P=O groups were studied by absorption spectroscopy in the stretching vibration range. A VR-10 double beam spectrophotometer was used. O-H vibrations were studied in the region of the principal frequencies (3000-4000 cm^{-1}) as well as in the overtone region (6000-8000 cm^{-1}). The overtone absorption bands were found to be more sensitive to changes of the intermolecular interaction than the principal bands. For investigation in the overtone region a special high dispersion instrument was used, based on the ISP-51 spectrograph. It was found that the P=O group of tributylphosphate is strongly bound to water molecules through hydrogen bonds. When dry HCl or $HReO_4$ are introduced into dry

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tributylphosphate the following complexes are formed: $(C_4H_9O)_3PO...HCl$ and $(C_4H_9O)_3PO...HReO_4$. When HCl or $HReO_4$ are introduced into tributylphosphate containing a small amount of water, hydration of the proton occurs at the expense of the destruction of bonds between water molecules and solvent, with production of $H_9O_4^+$ ion. This ion is joined to the P=O group of tributylphosphate. When HCl and $HReO_4$ are extracted from water, complexes of the following type are formed:

$[(C_4H_9O)_3PO...H_9O_4]^+Cl^-$ and $[(C_4H_9O)_3PO...H_9O_4]^+ReO_4^-$.

The presence of HCl in the aqueous phase is necessary for the creation of the cationic part of the extracted complex, however, since the extraction mechanism for HCl and $HReO_4$ is the same, the presence of excess HCl in water hinders the extraction of Re due to competition for the place in the anionic part of the extracted complex. An optimum value of the concentration of HCl in the solution was determined (3M), which is in agreement with the previously obtained experimental data. The increase of ReO_4^- concentration in the solution decreases the solubility of water in the organic phase. Orig. art. has: 2 tables and 5 figures.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000720920017-3"

L 52977-65

ACCESSION NR: AP5009952 3

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR (Institute of Geochemistry and Analytical Chemistry, AN SSSR); Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnic Institute); Gosudarstvennyy institut redkikh metallov (State Institute of Rare Metals)

SUBMITTED: 19May64 ENCL: 00 SUB CODE: GC, OP

NO REF SOV: 006 OTHER: 005

LL

Card 3/3

CHIBISOV, A.K.; KARYAKIN, A.V.; YEVSTIGNEYEV, V.B.; [illegible] I.G.

Study of primary photochemical relationships between chlorophyll pigments and electron acceptors and donors with the help of impulse spectroscopy. Biofizika 10 no.6:1058-1100 '65.
(MIRA 19:1)

1. Institut biokhimii imeni A.N.Bakha AN SSSR, Moskva.
Submitted July 27, 1965.

L 34007-65 EWT(d)/EWT(l)/EPA(s)-2/EWT(m)/EWP(e)/EPF(n)-2/EWP(c)/EWP(v)/EPA(w)-2/T/EWP(k)/EWP(b)/EWP(l) Pf-4/Pt-10/Pu-4/Pab-10 UJP(c) WH

ACCESSION NR: AP5007675 S/0032/65/031/003/0325/0327

AUTHORS: Karyakin, A. V.; Borovikov, A. S.; D'yakov, L. A.

60
51
B

TITLE: Luminescent defectoscopy of porous materials

SOURCE: Zavodskaya laboratoriya, v. 31, no. 3, 1965, 325-327

TOPIC TAGS: defectoscope, luminescence method, porous material/ OP 7 emulsifier, OP 10 emulsifier, UFS 6 light filter, DRSh 250 lamp

ABSTRACT: Luminescent and color defectoscopy has not been widely successful in the past for testing nonmetallic porous wares that are not amenable to electroinductive or ultrasonic testing. The porosity has generally produced a background that obscures surface defects. The authors tested a variety of materials and found that the luminescent method may be used if the type of porosity of the material is known. The type of porosity rather than size of pores is the determinative factor. Material with pores that do not interconnect (fired ceramics and glass) and material that does not become impregnated when soaked in liquid must be tested by the luminescent method developed for metals. Material with chiefly interconnected pores or fractures (many types of unfired ceramics and concrete) can be successfully tested by particle filtering. Best results are obtained

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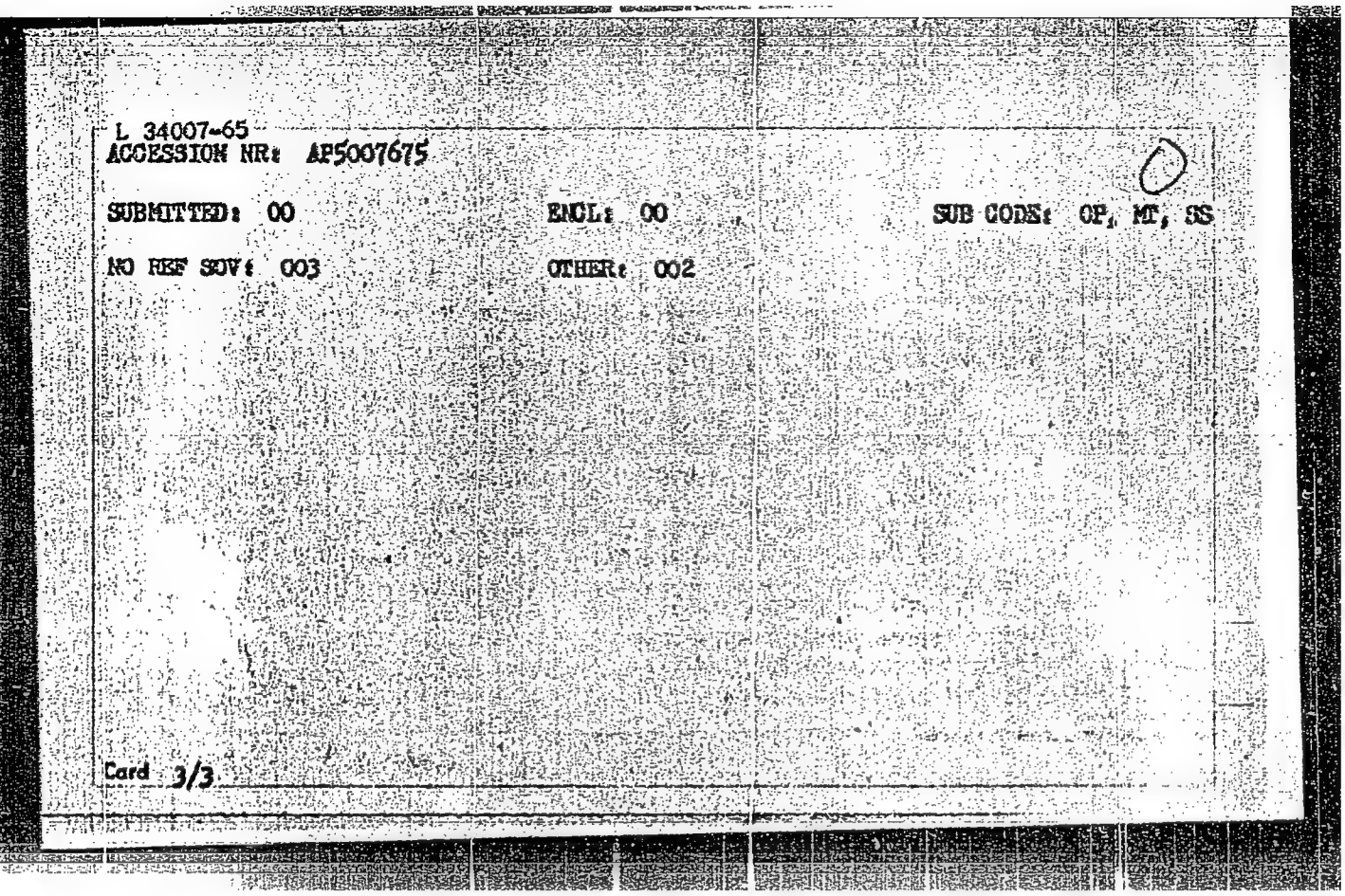
using particles that luminesce in either ultraviolet or daylight. The background is lowest with low surface density of pores. This value is near zero for metals, glasses, and glazed ceramics. For materials with interconnecting pores or fractures, it is necessary to determine the effective permeability of any liquid relative to the capillaries of the material. For concrete, insoluble organic luminophores, luminescent in both daylight and ultraviolet, suspended in water are satisfactory. The particles must be 5-10 times the average pore size of the test material. In this case the particles are generally 35-50 microns across. Generally 0.5-1 g of phosphorogen (such as enamel pigment) and 0.05-0.5 g of surface-active substance (such as OP-7 or OP-10 emulsifier) are suspended in one liter of water. The phosphorogen is ground in a ball mill (ceramic balls) and then mixed with a small amount of water and surface-active material to form a paste. This paste is then diluted to the required proportion. The suspension is applied to the test surface with an atomizer or a brush, or the material is dipped briefly in the suspension. After 30-60 seconds the surface is examined in ultraviolet light. Orig. art. has: 2 figures.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo (Institute of Geochemistry and Analytical Chemistry)



L 34007-65
ACCESSION NR: AP5007675

SUBMITTED: 00 ENCL: 00 SUB CODE: OP, MT, SS

NO REF SOV: 003 OTHER: 002

Card 3/3

L 1659-66 EWT(m)/EWP(j) RM

ACCESSION NR: AP5021415 UR/0076/65/039/008/1895/1899
541.8+543.42

AUTHOR: Karyakin, A. V.; Chmutina, L. A. 44 44 15,44

TITLE: Studies of alcohol solutions of dyes and pigments in the presence of a polyamide

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 8, 1965, 1895-1899

TOPIC TAGS: polyamide, fluorescent dye, chlorophyll, photooxidation, fluorescence spectrum

ABSTRACT: The experiment involved a study of the spectral characteristics of alcohol solutions of methylol polyamide with the pigment chlorophyll and with anionic and cationic dyes whose interaction with natural proteins in aqueous solutions at various pH's had been established earlier. Absorption spectra of solutions of the polyamide with trypaflavine, eosin, and acridine orange, and fluorescence spectra of solutions of the polyamide with fluorescein, eosin, acridine orange, coryphosphine, rhodamine 6G, trypaflavine, and pyronine (all fluorescent dyes) and chlorophyll were recorded. The same regularities were observed in both sets of spectra. In the case

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L 1659-66

ACCESSION NR: AP5021415

6

of the fluorescent dyes, the replacement of the natural protein by the polymer results in a considerably lesser spectral change than in buffer solutions. The weak interaction with the high-molecular synthetic substance having a peptide bond is due to its lack of functional carboxyl groups. Even when the polyamide is weakly bound to the pigment, it has a strong influence on its photochemical activity. It stabilizes the photooxidation of the pigment both under natural and artificial illumination. "We express our appreciation to L. A. Tumerman and L. Ye. Minchenkova for assistance in the experiment." Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii, Akademiya nauk SSSR (Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 14Mar65 ENCL: 00 SUB CODE: GC

NO REF SOV: 015 OTHER: 002

Card 2/2

L 11444-66 EWT(m)/EPF(c)/EWP(j)/T/ETC(m) DS/WW/RM

ACCESSION NR: AP5023693 UR/0076/65/039/009/2291/2293
541.14 + 547.979.4

44,55 44,55 44,55 48 45 B

AUTHOR: Chibisov, A. K.; Karyakin, A. V.; Zubrilina, M. Ye.

1,44,55

TITLE: Photooxidation of chlorophyll under pulsed illumination

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 9, 1965, 2291-2293

TOPIC TAGS: photolysis, chlorophyll, pulsed illumination

ABSTRACT: Reactions of reversible photooxidation of chlorophylls *a*, *a* + *b*, and *b* in ethanol solution (concentration 2×10^{-5} mol/l) were studied at 20°C by means of pulsed photolysis. Some measurements were made at -40°C. Tetrachlorobenzoquinone (5×10^{-5}-1×10^{-3} mol/l) was used as the oxidant. The solutions were exposed to pulsed photoexcitation in the "red" absorption band of the pigments. The complex character of the oscillograms obtained is due to the different stabilities of the intermediate states of components *a* and *b* of the pigment during the photooxidation. The fact that spectral changes during the pulsed photoexcitation of the pigment - tetrachlorobenzoquinone system take place in an oxygen-containing solution shows that a photochemical reaction occurs between the singlet-excited pigment

Card 1/2

L 11444-66

ACCESSION NR: AP5023693

molecules and the tetrachlorobenzoquinone (electron acceptor) molecules. It is postulated that the spectral changes observed in the chlorophylls consist in the difference in the light transmission of unexcited pigment molecules and probably of the cation radical of the pigment. Orig. art. has: 2 figures, 1 formula.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii, Akademiya nauk SSSR (Institute of Geochemistry and Analytical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 24Jun64 ENCL: 00 SUB CODE: LS,OP

NO REF SOV: 008 OTHER: 004

Card 2/2

CHIBISOV, A.K.; KARYAKIN, A.V.; ZUBRILINA, M.Ye.

Photoreduction of pigments under impulse illumination. Dokl. AN SSSR 161 no.2:483-486 Mr '65. (MIRA 18:4)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo AN SSSR. Submitted June 11, 1964.

KARYAKIN, A. V.; ANIKINA, L. I. Moscow

"Lumineszenzverfahren zur Bestimmung von Seltenerdelementen."

report submitted for 2nd Intl Symp on Hyperpure Materials in Science and Technology, Dresden, GDR, 28 Sep-2 Oct 65.

Institut geokhimii i analiticheskoy khimii im Vernadskiy Akademii nauk SSSR, Moscow.

KARYAKIN, A. V.; AKHMANOVA, M. V.;KAYGORODOV, V. A. Moscow

"Moglichkeiten zur Answendung eines Impulslasers in der Spektralanalyse reiner Stoffe."

report submitted for 2nd Intl Symp on Hyperpure Materials in Science and Technology, Dresden, GDR, 28 Sep-2 Oct 65.

Institut geokhimii i analiticheskoy khimii im Vernadskiy Akademii nauk SSSR, Moscow.

BASTAN, P.P., inzh.; IVCHENKO, A.N., dotsent; KARYASHKIN, B.S., inzh.

Method of calculating losses and depletion of ore in blast and boreholes at the Sokolovka strip mine. Izv. vys. ucheb. zav.; gor. zhur. 7 no.11:35-42 '64. (MIRA 18:3)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana kafedroy marksheyderskogo dela.

ACC NR: AP6031062 SOURCE CODE: UR/0007/66/000/009/1106/1109

AUTHOR: Vinogradov, A. P.; Vdovykin, G. P.; Karyakin, A. V.; Zubrilina, M. Ye.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Investigation of the organic compounds and diamonds of the Novyy Urey meteorite by infrared absorption spectroscopy

SOURCE: Geokhimiya, no. 9, 1966, 1106-1109

TOPIC TAGS: meteoritics, diamond, ~~infrared~~ IR absorption spectroscopy, organic compound, meteorite, IR spectroscopy, absorption band

ABSTRACT: The organic compounds and diamonds of the Novyy Urey meteorite, which fell in the Gor'kiy oblast' in 1886, are investigated by means of infrared absorption spectroscopy. The Novyy Urey meteorite, like the Goalpara meteorite with which it is compared, is an ureilite. Specimens were examined with the UR-10 quartz spectrograph. The organic compounds were extracted with chloroform, while the diamonds were extracted by fusing the meteorite powder with Na_2O_2. The presence of the CH_3 and CH_2 groups was positively confirmed, while the presence of C-N-H groups was thought possible. The organic matter was represented by paraffin hydrocarbons. In the infrared spectrum of the diamond fraction, absorption bands appeared at 500 cm^{-1} and especially at 900—1300 cm^{-1}. These absorption bands are characteristic of type-I

Card 1/2 UDC: 550.4+552.6

ACC NR: AP6031062

diamonds containing and admixture of nitrogen in their crystal lattice. The presence of nitrogen in the diamonds of the Novyy Urey meteorite is thought to suggest a genetic raltionship between ureilite diamonds and the carbonaceous matter in chondrites. The nitrogen, most probably, was captured by the diamonds during crystallization resulting from a collosion with asteroids. Orig. art. has: 3 figures. [DM]

SUB CODE: 03/ SUBM DATE: 21Apr66/ OTH REF: 002

Card 2/2

ACC NR: AP7012443 SOURCE CODE: UR/0075/66/021/010 1196-1200

AUTHOR: Karyakin, A. V.; Anikina, L. I.; Filatkina, L. A.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Luminescent determination of small quantities of terbium, dysprosium and gadolinium in yttrium oxide

SOURCE: Zhurnal analiticheskoy khimii, v. 21, no. 10, 1966, 1196-1200

TOPIC TAGS: luminescence spectrum, terbium, dysprosium, gadolinium, yttrium compound, mercury lamp, light filter / DRSH-250 mercury-quartz lamp, UFS-1 light filter

SUB CODE: 08,07,11

ABSTRACT: The authors tested various bases for rare-earth phosphor crystals including yttrium compounds in developing a luminescent method for determining small quantities of terbium, dysprosium and gadolinium in yttrium oxide. $CaMoO_4$, $CaWO_4$, $Na_2B_4O_7$ and CaF_3 were tested as the base material for preparation of phosphor crystals. The yttrium was taken in the form of YCl_3, YF_3 and Y_2O_3. A certain quantity of terbium and dysprosium was in-

Card 1/2 UDC: 543.426

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ACC NR: AP7012443

troduced into each of the mixtures and luminescence intensity was measured after high-temperature firing. The best results for terbium and dysprosium were observed with the use of phosphor crystals based on calcium fluoride and yttrium oxide in a 1:1 ratio. A DRSh-250 mercury-quartz lamp with a UFS-1 filter was used as the excitation source. The brightest luminescence bands for terbium and dysprosium were observed in the 300-600 mμ range with maxima at 544 and 572 mμ for terbium and dysprosium respectively. Band intensity on these maxima may be used for determining terbium with a sensitivity of $1 \cdot 10^{-4}$ and dysprosium with a sensitivity of $5 \cdot 10^{-4}$%. Phosphor crystals based on Y_2O_3 were found to be best for determination of gadolinium in yttrium oxide. Since the band maximum for this element lies at 312 mμ special equipment must be used for registration. The luminescent method gives a sensitivity of $1 \cdot 10^{-4}$% for gadolinium determination in yttrium oxide. Reproducibility for the proposed method is 20-30%.
Orig. art. has: 6 figures. [JPRS: 40,422]

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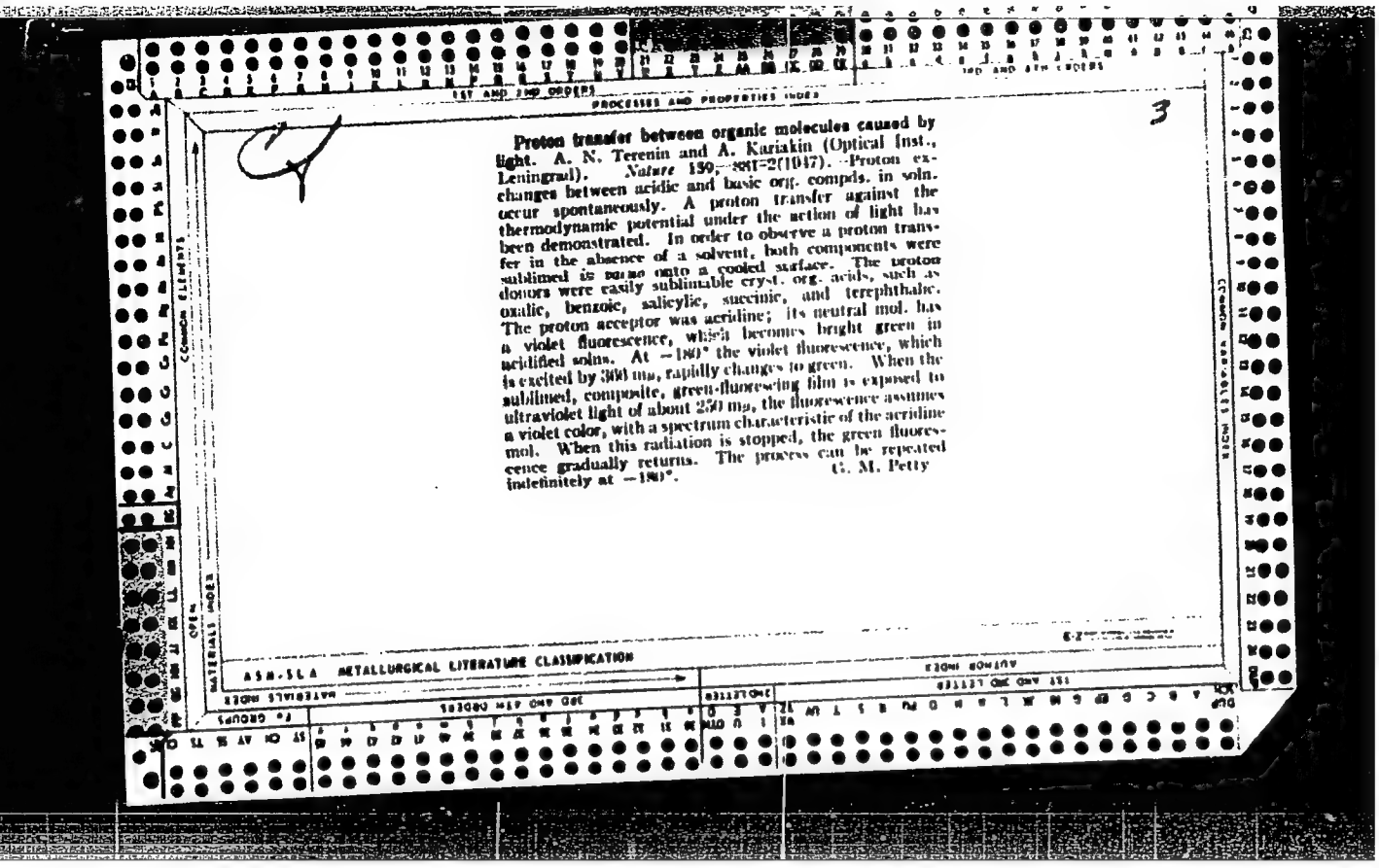
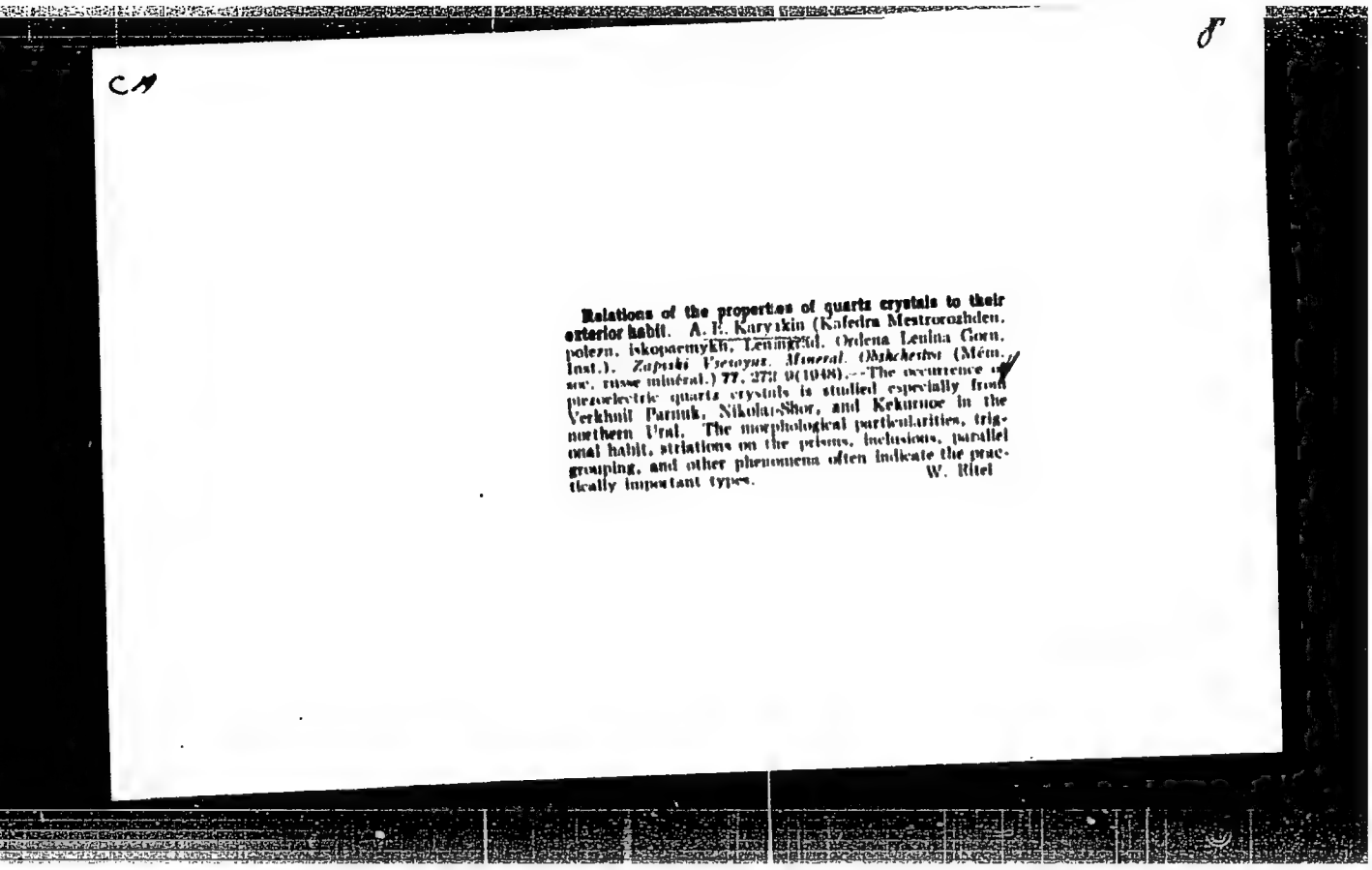


Proton transfer between organic molecules caused by light. A. N. Terenin and A. Kariakin (Optical Inst., Leningrad). *Nature* 139, 881-2(1947).—Proton exchanges between acidic and basic org. compds. in soln. occur spontaneously. A proton transfer against the thermodynamic potential under the action of light has been demonstrated. In order to observe a proton transfer in the absence of a solvent, both components were sublimed in vacuo onto a cooled surface. The proton donors were easily sublimable cryst. org. acids, such as oxalic, benzoic, salicylic, succinic, and terephthalic. The proton acceptor was acridine; its neutral mol. has a violet fluorescence, which becomes bright green in acidified solns. At −180° the violet fluorescence, which is excited by 300 mμ, rapidly changes to green. When the sublimed, composite, green-fluorescing film is exposed to ultraviolet light of about 250 mμ, the fluorescence assumes a violet color, with a spectrum characteristic of the acridine mol. When this radiation is stopped, the green fluorescence gradually returns. The process can be repeated indefinitely at −180°. G. M. Petty



Relations of the properties of quartz crystals to their exterior habit. A. E. Karyakin (Kafedra Mestorozhden. polezn. iskopaemykh, Leningrad. Ordena Lenina Gorn. inst.). *Zapiski Vsesoyuz. Mineral. Obshchestva* (Mém. soc. russe minéral.) **77**, 273–9(1948).—The occurrence of piezoelectric quartz crystals is studied especially from Verkhnii Parnuk, Nikolai-Shor, and Kekurnoe in the northern Ural. The morphological particularities, trigonal habit, striations on the prisms, inclusions, parallel grouping, and other phenomena often indicate the practically important types. W. Ritel

[illegible] M., A. Ye.

37243. Geneticheskaya svyaz' khrustal'nykh gnezd s kvartsevymi zhilami i proiskhozhd eniye polostey zapiski Leningr. Gornogo in-ta, T. XXIII, 1948, s. 153-57
V. gidrologiya. Meteorologiya. Klimatologiya

SO: Letopis' Zhurnal'nykh Statey, Vol. 7, 1949

KARYAKIN, A.Ye., deystvitel'nyy chlen.

Origin, growth, and disintegration of quartz crystals. Zap.Vses. min.ob-va 83 no.1:11-22 '54. (MLRA 7:3) (Quartz)

KARYAKIN, A.Ye.

Gas and liquid inclusions and the coloration of quartz crystals as criteria for determining the geological age of crystalline clusters. Zap.Vses.min.ob-va 83 no.4:348-354 '54. (MLRA 8:2)

1. Leningradskiy Gornyy institut. Kafedra mestorozhdeniy poleznykh iskopayemykh.
(Quartz) (Geological time)

KARYAKIN, A.Ye.

Relation of the external face of quartz crystals to the chemical composition of the environment. Kristallografiia (LGI) no.4:80-85 '55. (MLRA 10:5)

(Quartz crystals)

KARyakin A. E.

15

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Dependence of the coloration of quartz crystals on the chemical composition of rocks containing nests of rock crystals. A. E. Karyakin. *Kristallografiya* 1955, No. 4, 58–61; *Referat. Zhur., Khim.* 1956, Abstr. No. 12687.—The mineral compn. of rock-crystal nests and the coloration of quartz depend on the chem. compn. of the surrounding rocks. Colored quartz crystals (smoky quartz, amethyst) occur in close assocn. with Fe-contg. minerals hematite, goethite, siderite, chlorite, and epidote, and are usually found in rocks that are rich in iron (diabase, diorite, amphibolite, quartz-biotite, and quartz-chlorite shales). Colorless quartz crystals belong to true quartz-type rocks: quartzites, sandstones, granites. It was found that quartz crystals lose their color under the action of sun rays. This indicates that nature forms many more varieties of colored quartz than are found on the surface of deposits. It also supplies a criterion for search of basic sources of colored quartz that have evaded the action of erosion. J. Mierzewska

KARYAKIN, A.Ye., professor.

Wall rock, the source of material for crystalline druse minerals.
Zap.Len.gor.inst.30 no.2:118-144 '55. (MLRA 9:7)
(Geochemistry)

KARYAKIN, A.Ye.

Age of crystalliferous quartz veins in the Soviet Union. Trudy VNIIP [MS] 3 no.2:5-12 '60. (MIRA 14:4)
(Quartz)

ABDULLAYEV, Kh.M.; BARSANOV, G.P.; GRIGOR'YEV, D.P.; KARYAKIN, A.Ye.; KASHKAY, M.A.; SOLOV'YEV, S.P.; UKLONSKIY, A.S.; SHADLUN, T.N.

Congress of the International Mineralogical Association in Switzerland. Zap. Vses. min. ob-va 89 no.1:133-137 '60. (MIRA 13:10)

(Mineralogy—Congresses)

BETEKHTIN, A.G.[deceased]; GOLIKOV, A.S.; DYBKOV, V.F.; IVANOV, G.A.; KARYAKIN, A.Ye.; KIRYUKOV, V.V.; KUPROV, I.G.; MAGAK'YAN, I.G.; STROKA, P.A.; TATARINOV, P.M.; CHEKHOVICH, Ye.D.; SMIRNOV, V.I., retsenzent

[Course in mineral deposits] Kurs mestorozhdenii poleznykh iskopaemykh. Izd.3., perer. i dop. Moskva, Nedra, 1964. 589 p. (MIRA 18:3)

KARYAKIN, B.P.

Methodology for calculating the utilization index of raw flax. Izv. vys. ucheb. zav.; tekh. tekst. prom. no.6: 3-7 '64. (MIRA 18:3)

1. Institut energetiki i elektrotekhniki AN Litovskoy SSR.

TARASOV, S.V., kand. tekhn. nauk; TREGUBOVA, B.L., kand. edonomicheskikh nauk; YEFANOVA, N.A., mladshiy nauchnyy sotrudnik; KARYAKIN, B.P., mladshiy nauchnyy sotrudnik

Trends in the efficient utilization of combing for short flax fibers and wastes. Nauch.-issl. trudy TSNIILV 16:99-117 '62. (MIRA 16:10)

KARYAKIN, G. A.

"On the Suitability of Modified and High Strength Cast Irons for Locomotive Valves Operating in Highly Superheated Steam," Cand Tech Sci, Moscow Order of Lenin and Order of Labor Red Banner Inst of Railroad Transport Engineers imeni I.V. Stalin, Min Railroads USSR, Moscow, 1955. (KL, No 14, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

KARYAKIN, G.A., kand. tekhn. nauk

Investigating the heat resistance of isothermically hardened valve rings made of high-strength cast iron. Trudy Khab. IIT no.10:60-67 '59. (MIRA 12:7)
(Valves--Testing)

KARYAKIN, G. I.

20591 KARYAKIN, G. I. Metallurgicheskiy shlak v sovremennykh morskikh morskikh o tiozheniyakh. Priroda, 1949, N° 6, s. 50-52- Bibliogr: 5nazv.

SO: LETOPIS ZHURNAL STATEY - Vol. 28- Moskva- 1949

SKRYABINA, V.G.; KARYAKIN, G.K.

More widespread introduction of progressive practices in the flat knit hoisery manufacture. Leg. prom. 16 no.7: 9-11 Jl '56. (MLRA 9:10)

(Hoisery industry)

SMIRNOV, Boris Mikhaylovich; KOLOMOYTSEV, V.P., redaktor; KARYAKIN, G.S., redaktor izdatel'stva; TIKHONOVA, Ye.A., tekhnicheskiy redaktor

[Approximation methods of determining construction costs of seagoing freighters] Priblizhennye methody opredeleniia stroitel'noi stoimosti morskikh gruzovykh sudov. Moskva, Izd-vo "Morskoi transport", 1956. 69 p. (MLRA 10:3)

(Shipbuilding--Costs)

KARYAKIN, I., master In'venskogo uchastka.; ZAYTSEV, N., master formirovochnogo uchastka.

Our rafts can withstand the force of any storm. Mast.lesa. no.4:12-14 Ap '57. (MIRA 10:10)

1.Kamskaya gidroelektrostantsiya, In'venskiy reyd, Molotovskaya oblast'.

(Lumber--Transportation)

L 21420-65 EWT(l)/EWP(m) Pd-1 APGC(m)
ACCESSION NR: AP5001363 S/0310/64/000/005/0024/0025

AUTHOR: Karyakin, I. (Director)

TITLE: Technical exploitation and repairs of ships on hydrofoils should be improved

SOURCE: Rechnoy transport, no. 5, 1964, 24-25

TOPIC TAGS: water traffic, hydrofoil, transportation/ M 50 motor, Rakota ship

ABSTRACT: Ideas are presented concerning the improvement of productivity of ships using hydrofoils. The author indicates that preventive maintenance procedures could be shortened. Common causes of repairs are reviewed. Drive trains and screw propellers are usually damaged by running aground, striking fixed objects, and by cavitation. The author recommends an interchange of standard procedures and details of the commonly damaged propulsion parts with other ship repair authorities. He also recommends that epoxide resins be used for some propeller defects. A special procedure for repairing damage to pump vanes and attachments is described, as is the process for repairing gaskets ruptured through anchor straining. Cylindrical cooling pipes serving the engine are prone to damage which leads to

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L 21420-65
ACCESSION NR: AP5001363

nonuniform cooling. Several technological modifications leading to greater cooling system reliability are cited; credit is given to mechanic Sazanovich (on the Rakuta-61) for a suggested modification. Several case histories of repairs are presented, with special attention devoted to the M-50 motor. A series of recommended modifications and areas for modification includes not only precautionary measures against wear and damage, but also modifications for safer navigation and for passenger and crew conditions. Further recommendations are made for reducing the problems involved with placing hydrofoil ships in dry dock.

ASSOCIATION: Krasnoyarskiy sudoremontnyy zavod (Krasnoyarsk Ship Repair Yard)

SUBMITTED: 00

ENCL: 00

SUB CODE: 00 NO REF SOV: 000 OTHER: 000

Card 2/2

KARYAKIN, I.

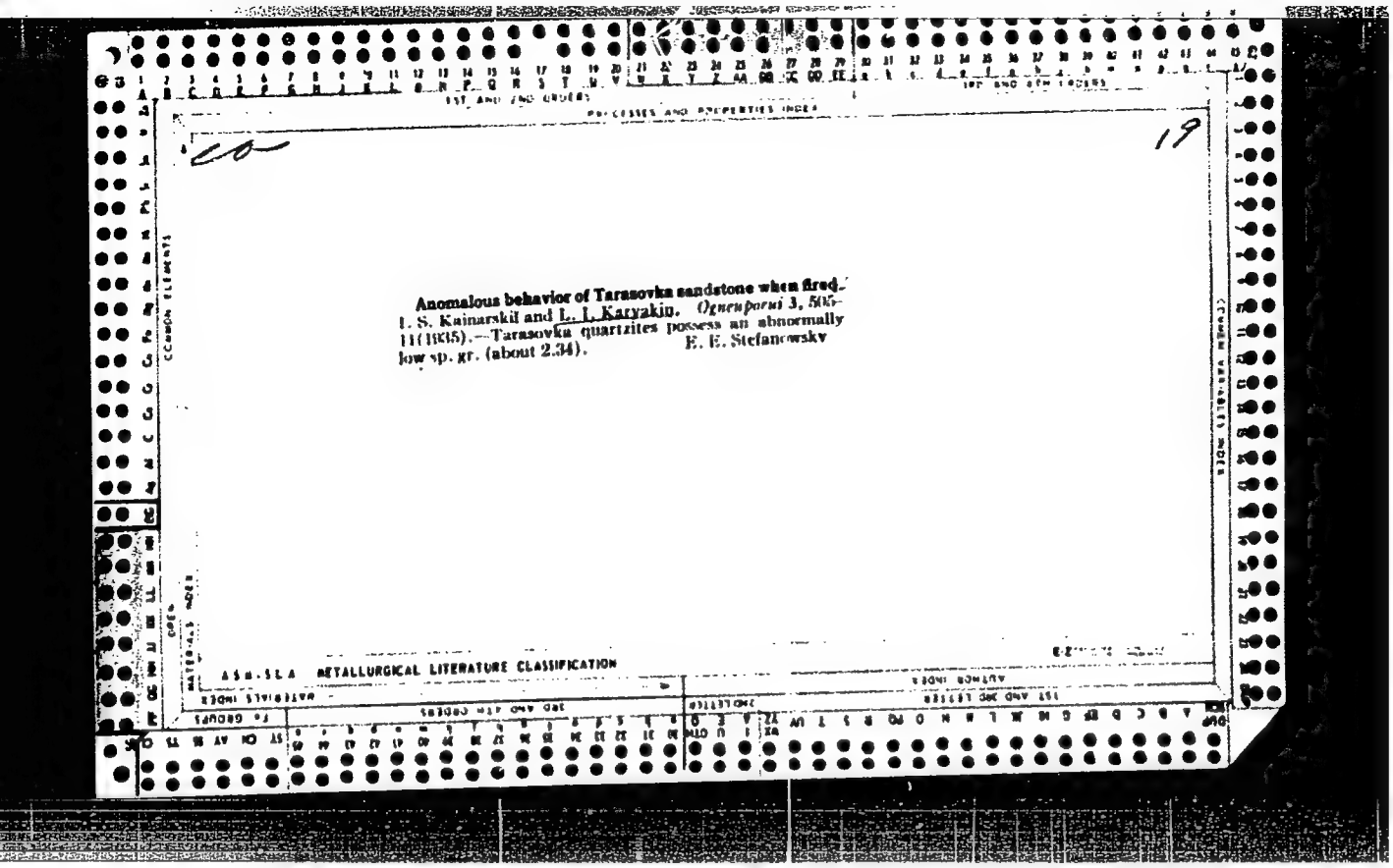
Let us conquer new frontiers of labor. Rech.transp. 23 no.9:27-28 S '64. (MIRA 19:1)

1. Direktor Krasnoyarskogo sudoremontnogo zavoda.

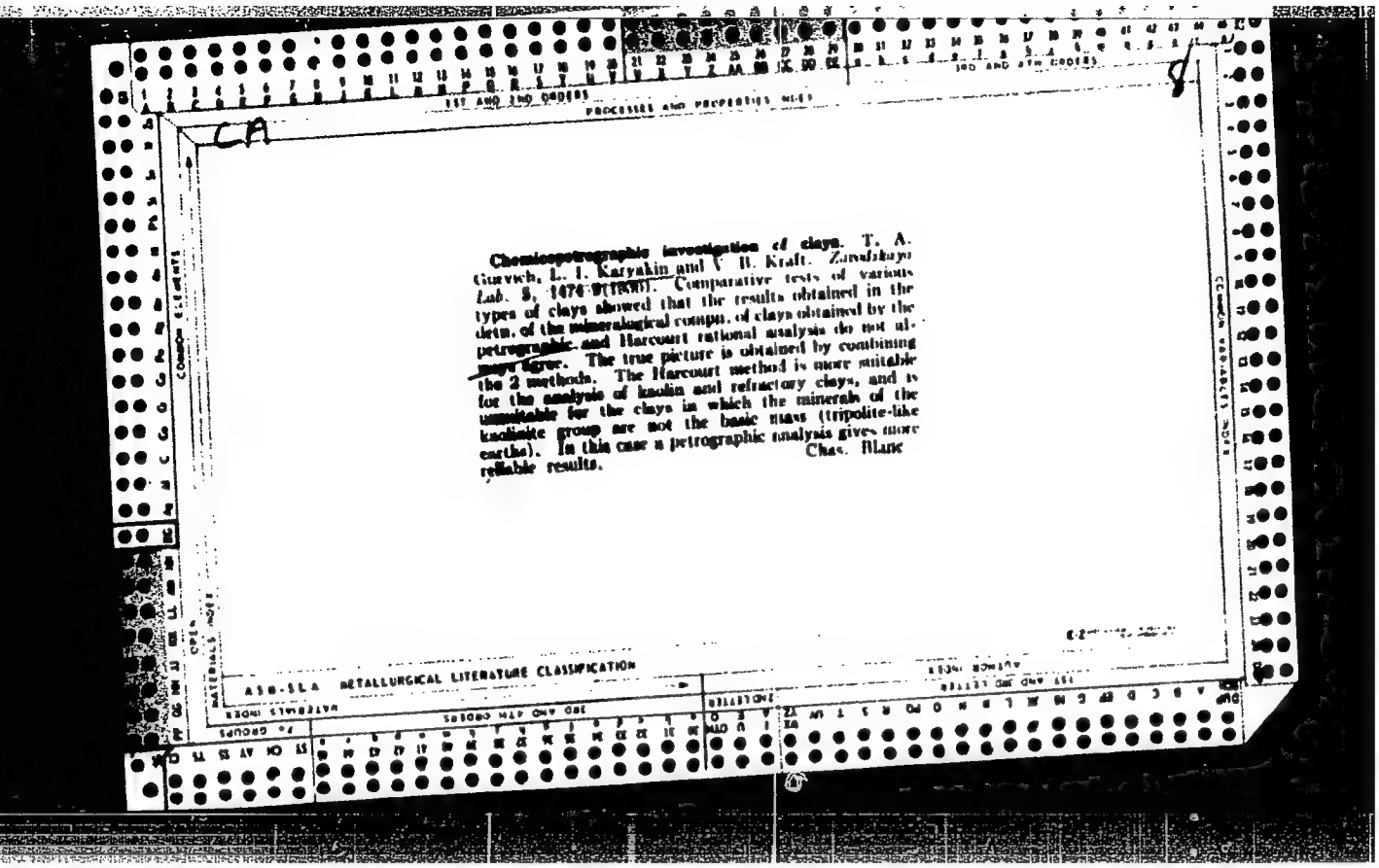
KARYAKIN, I.F.

Comparative characteristics of the composition and properties of the delta-alluvial sediments of the Murgab and Tedshen Rivers. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.3:81-86 '64 (MIRA 18:1)

1. Institut geologii AN Turkmenskoy SSR.



Anomalous behavior of Tarasovka sandstone when fired. I. S. Kainarskii and L. I. Karyakin. *Ogneupory* 3, 505–11(1935).—Tarasovka quartzites possess an abnormally low sp. gr. (about 2.34). E. E. Stefanovsky



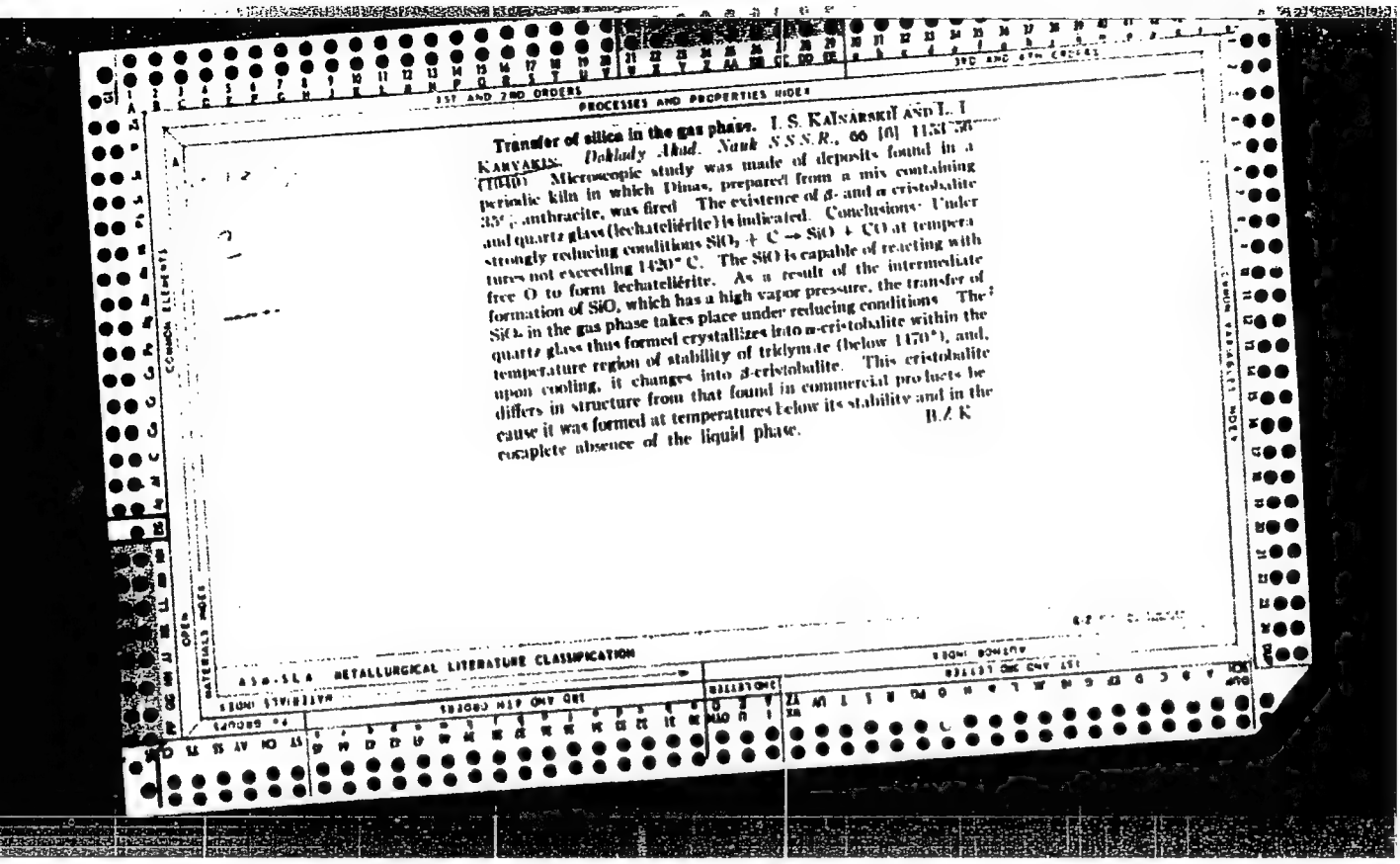
Chemicopetrographic investigation of clays. T. A. Gurvich, L. I. Karyakin and V. B. Kraft. *Zavodskaya Lab.* 5, 1476-9(1936). Comparative tests of various types of clays showed that the results obtained in the detn. of the mineralogical compn. of clays obtained by the petrographic and Harcourt rational analysis do not always agree. The true picture is obtained by combining the 2 methods. The Harcourt method is more suitable for the analysis of kaolin and refractory clays, and is unsuitable for the clays in which the minerals of the kaolinite group are not the basic mass (tripolite-like earths). In this case a petrographic analysis gives more reliable results.

Chas. Blanc

KARYA IN, L. I.

Karyakin, L. I. "Mineralogical compositions of sands of the Azovsk seashore between the sandbars of Berdyansk and Obitech," Mineral. sbornik, No. 2, 1948, p. 161-74 - Biblio: 14 items

SO: U-3851, 16 June 53, (Letopis 'Zhurnal 'nykh Statey, No. 5, 1949).



PROCESSES AND PROPERTIES INDEX

Transfer of silica in the gas phase. I. S. KALNARSKII AND L. I. KARYAKIN. *Doklady Akad. Nauk S.S.S.R.*, 66 [6] 1153-56 (1949). Microscopic study was made of deposits found in a periodic kiln in which Dinas, prepared from a mix containing 33% anthracite, was fired. The existence of β- and α-cristobalite and quartz glass (lechatelierite) is indicated. Conclusions: Under strongly reducing conditions $SiO_2 + C \rightarrow SiO + CO$ at temperatures not exceeding 1420° C. The SiO is capable of reacting with free O to form lechatelierite. As a result of the intermediate formation of SiO, which has a high vapor pressure, the transfer of SiO_2 in the gas phase takes place under reducing conditions. The quartz glass thus formed crystallizes into α-cristobalite within the temperature region of stability of tridymite (below 1470°), and, upon cooling, it changes into β-cristobalite. This cristobalite differs in structure from that found in commercial products because it was formed at temperatures below its stability and in the complete absence of the liquid phase. B.Z.K.

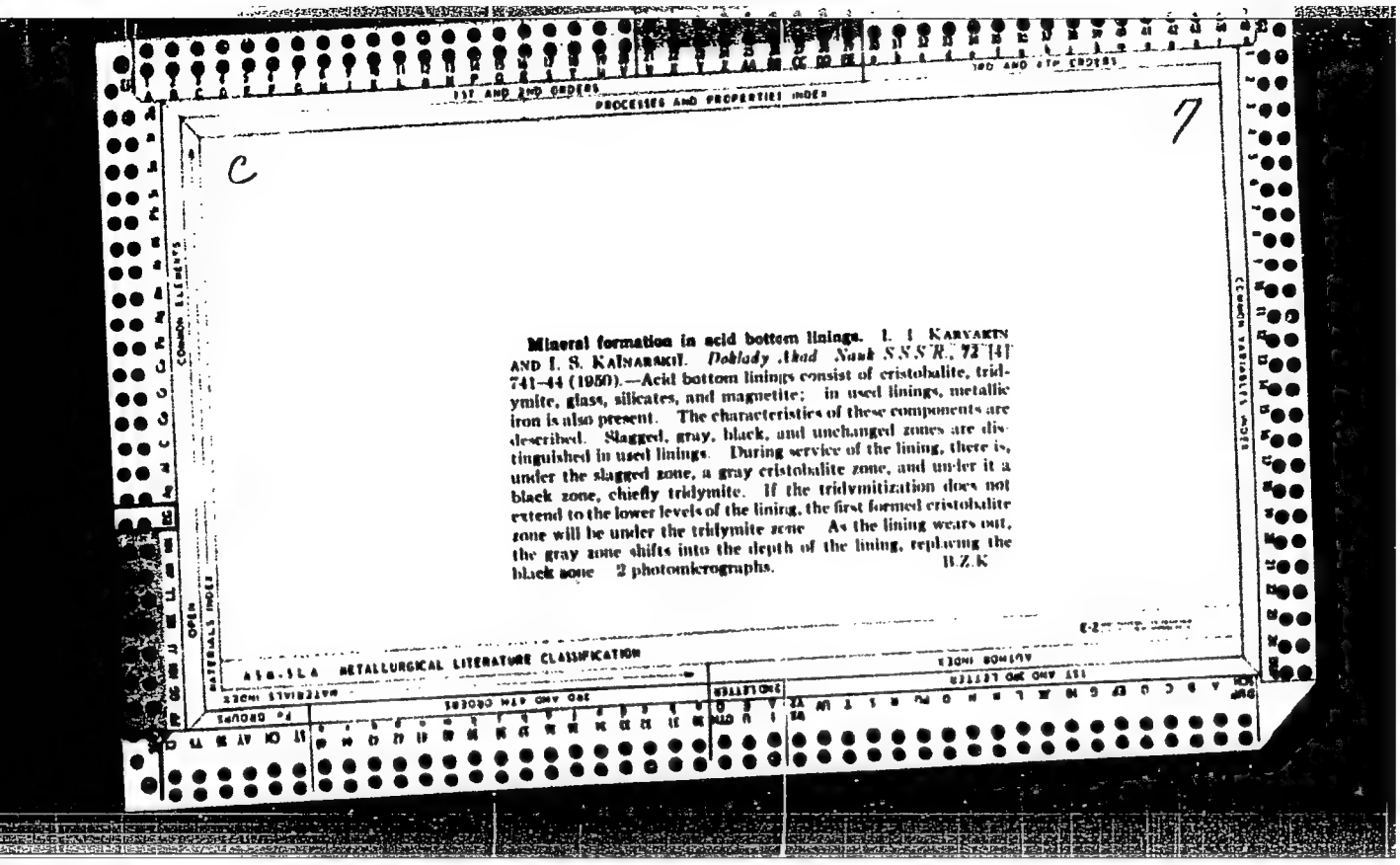
A56-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

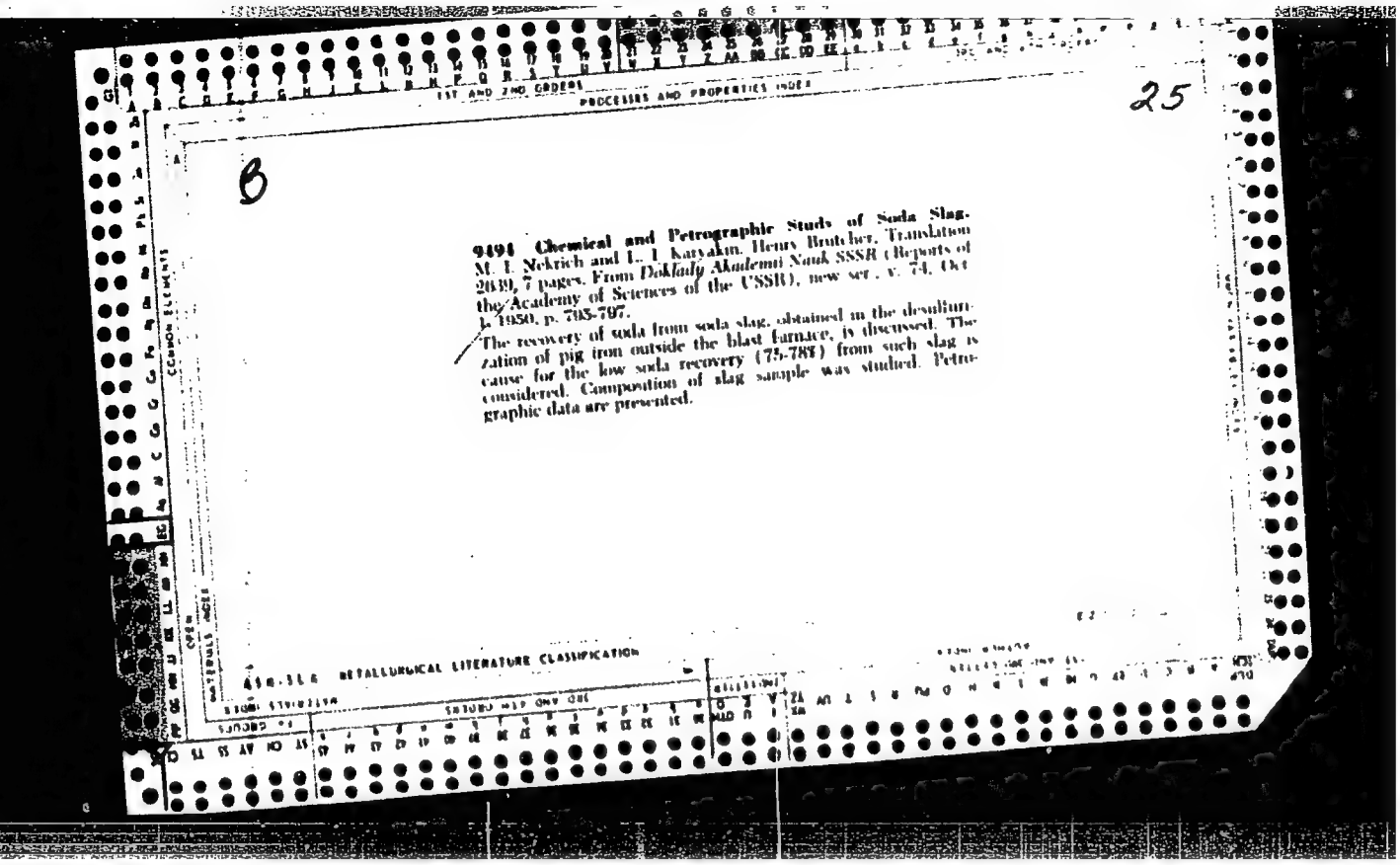
1

Cristobalite in acid hearths. L. I. Karyakin and I. S. Kalnarskii. *Doklady Akad. Nauk S.S.S.R.* 70, 1049-51 (1950).—From the gray and black zones of silica brick after a long service in an acid steel hearth, three different types of cristobalite crystns. are described: (1) a metastable form which is observed in the immediate neighborhood of quartz relics, and characterized by its isotropy, i.e. the high-temp. (α) modification, with $n = 1.485 \pm 0.002$; (2) a scaly-aggregated cristobalite with the normal ns of the β-modification: $\gamma = 1.487$; $\alpha = 1.484 \pm 0.001$; most frequently embedded in a glass of higher n (Excellent paramorphoses of this cristobalite after tridymite are observed, which preserve the exterior habit of this mineral, with its twins, etc.); (3) an acicular, needle-shaped form of cristobalite, often as "Christmas trees," with octahedral endings. Fayalite and magnetite accompany this cristobalite in an obsidian-like dark brown glass matrix. This type is identical with the forms described by Fenner in his fundamental investigation on the SiO_2 modifications, and is evidently crystd. from silica glass as devitrification and inversion product after quartz, at temps. between 1350 and 1600°.

W. Eitel



Mineral formation in acid bottom linings. I. I. KARYAKIN AND I. S. KAĬNARAKIĬ. *Doklady Akad. Nauk S.S.S.R.*, 72 [4] 741–44 (1950).—Acid bottom linings consist of cristobalite, tridymite, glass, silicates, and magnetite; in used linings, metallic iron is also present. The characteristics of these components are described. Slagged, gray, black, and unchanged zones are distinguished in used linings. During service of the lining, there is, under the slagged zone, a gray cristobalite zone, and under it a black zone, chiefly tridymite. If the tridymitization does not extend to the lower levels of the lining, the first formed cristobalite zone will be under the tridymite zone. As the lining wears out, the gray zone shifts into the depth of the lining, replacing the black zone. 2 photomicrographs. B.Z.K.



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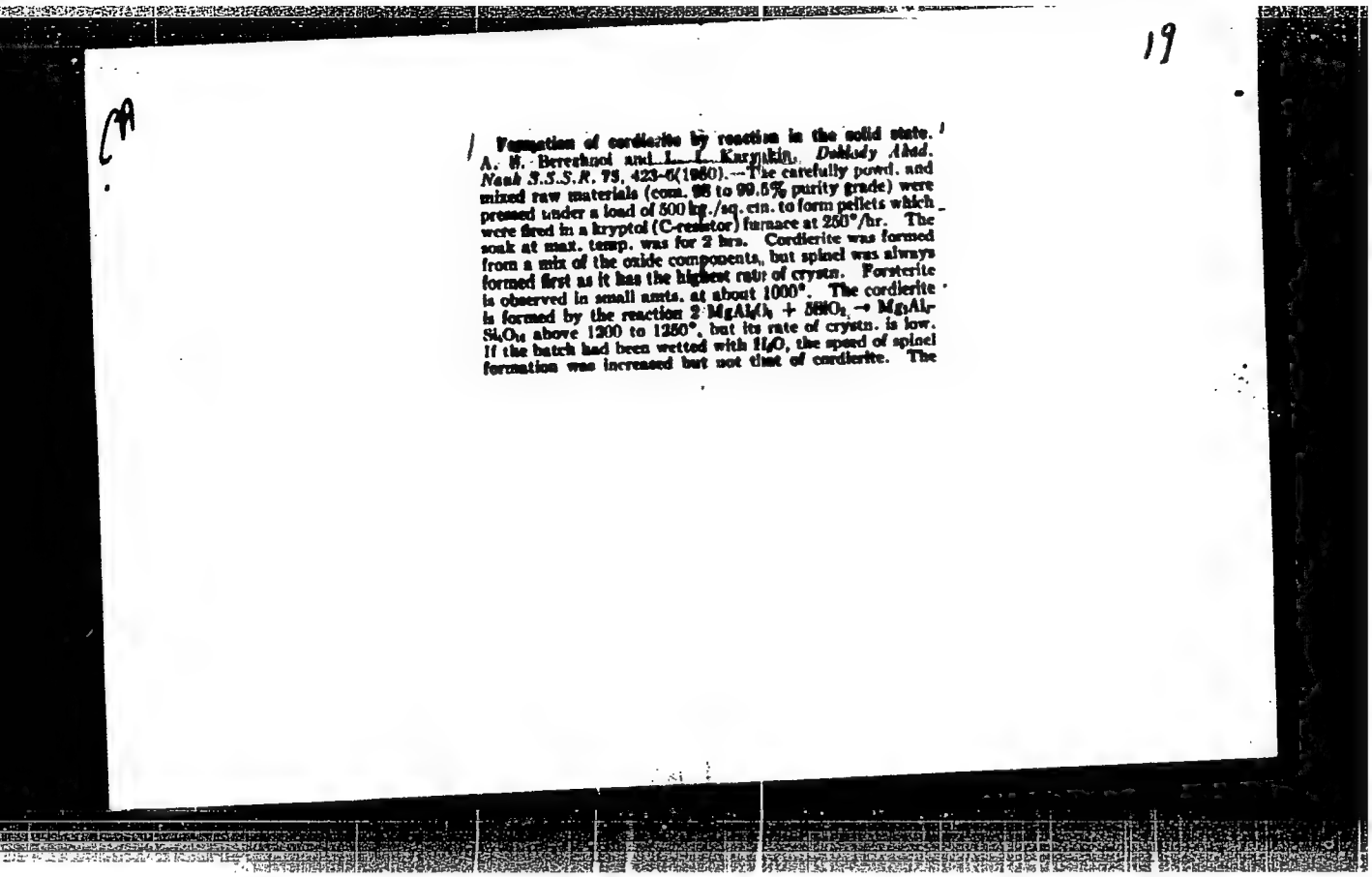
9494 **Chemical and Petrographic Study of Soda Slag.** M. I. Nekrich and L. I. Kasyakin. Henry Brutcher, Translation 2039, 7 pages. From *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR), new ser., v. 74, Oct. 1, 1950, p. 793-797.

The recovery of soda from soda slag, obtained in the desulfurization of pig iron outside the blast furnace, is discussed. The cause for the low soda recovery (75-78%) from such slag is considered. Composition of slag sample was studied. Petrographic data are presented.

418.3L6 METALLURGICAL LITERATURE CLASSIFICATION



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CA

Formation of cordierite by reaction in the solid state. A. S. Berezhnoi and I. I. Kazyukin. *Doklady Akad. Nauk S.S.S.R.* 79, 423-6(1950).—The carefully powd. and mixed raw materials (com. 98 to 99.5% purity grade) were pressed under a load of 500 kg./sq. cm. to form pellets which were fired in a kryptol (C-resistor) furnace at 250°/hr. The soak at max. temp. was for 2 hrs. Cordierite was formed from a mix of the oxide components, but spinel was always formed first as it has the highest rate of crystn. Forsterite is observed in small amts. at about 1000°. The cordierite is formed by the reaction $2\,MgAl_2O_4 + 5SiO_2 \rightarrow Mg_2Al_4Si_5O_{18}$ above 1200 to 1250°, but its rate of crystn. is low. If the batch had been wetted with H_2O, the speed of spinel formation was increased but not that of cordierite. The

reaction in a mix. of forsterite and calcined kaolin is intense at 1000 to 1100°; first spinel (n = 1.718) is formed assocd. with cristobalite which gradually disappears if the temp. is raised to 1400°. There no cordierite but glass (n = 1.525–1.561) with mullite needles is formed. Pure glass of cordierite compn. has n = 1.550, d. 2.32, and thermal-expansion coeff. $\alpha = 0.7 \times 10^{-6}$ (higher than cryst. cordierite). The highest rate of cordierite formation was observed in a mix of spinel and quartz in the direct reaction given above. Preformed $MgSiO_3$ (from calcined talc) in a mix with calcined metakaolin also reacts easily to form cordierite, but in this case the temp. of the soak must be higher than in the mix of spinel + SiO_2. The rate of cordierite formation is about the same in mixes of talc and metakaolin, and that of free MgO + quartz + metakaolin. A mix of serpentine and metakaolin reacts at about the same rate as that of forsterite and metakaolin. The presence of some Fe oxides does not exert any remarkable effects on the cordierite crystn. The rate of crystn. of cordierite is particularly great at 1400° and greater than that of mullite, but the rate of spinel and forsterite formation is highest throughout. For the industrial production of cordierite brick it is essential to maintain the firing temp. in the optimum range of 1300–1350° in order to avoid the formation of glass which has a higher thermal expansion.

W. E.

C. A.

Determination of sedimentary rocks by heavy solutions.

L. I. Karyakin. *Zapiski Vsesoyus. Mineral. Obshchestva* (Mém. soc. russe minéral.) 79, 203–10(1950).—The practical methods of the fractionation of sediments by heavy liquids are critically discussed and the results of the detailed examn. of five rocks given: a diatomite from Kharkov, glauconite clay from Cherkaskie Tishki, and 3 clayish or glauconitic sands from the Poltava horizons. K. proposes a fractionation by their d. in the following 6 steps: 3.10; 3.10–2.80; 2.80–2.65; 2.65–2.60; 2.60–2.50; and below 2.50, with Thoulet soln. The heavy minerals are particularly enriched in the grain fractions above 0.01 mm. but the fractionation of finer-grain sizes with the heavy soln. is unsatisfactory unless special methods, such as centrifugation or x-ray examns. are applied. For the chem. discussion of the sediments it is indispensable to det. the mineral. compn. of each of the 6 fractions. The practical upper limit of grain size is proposed to be 1 mm. The often-occurring coating of the mineral grains with thin films of amorphous SiO_2 and limonite is troublesome. W. Eitel

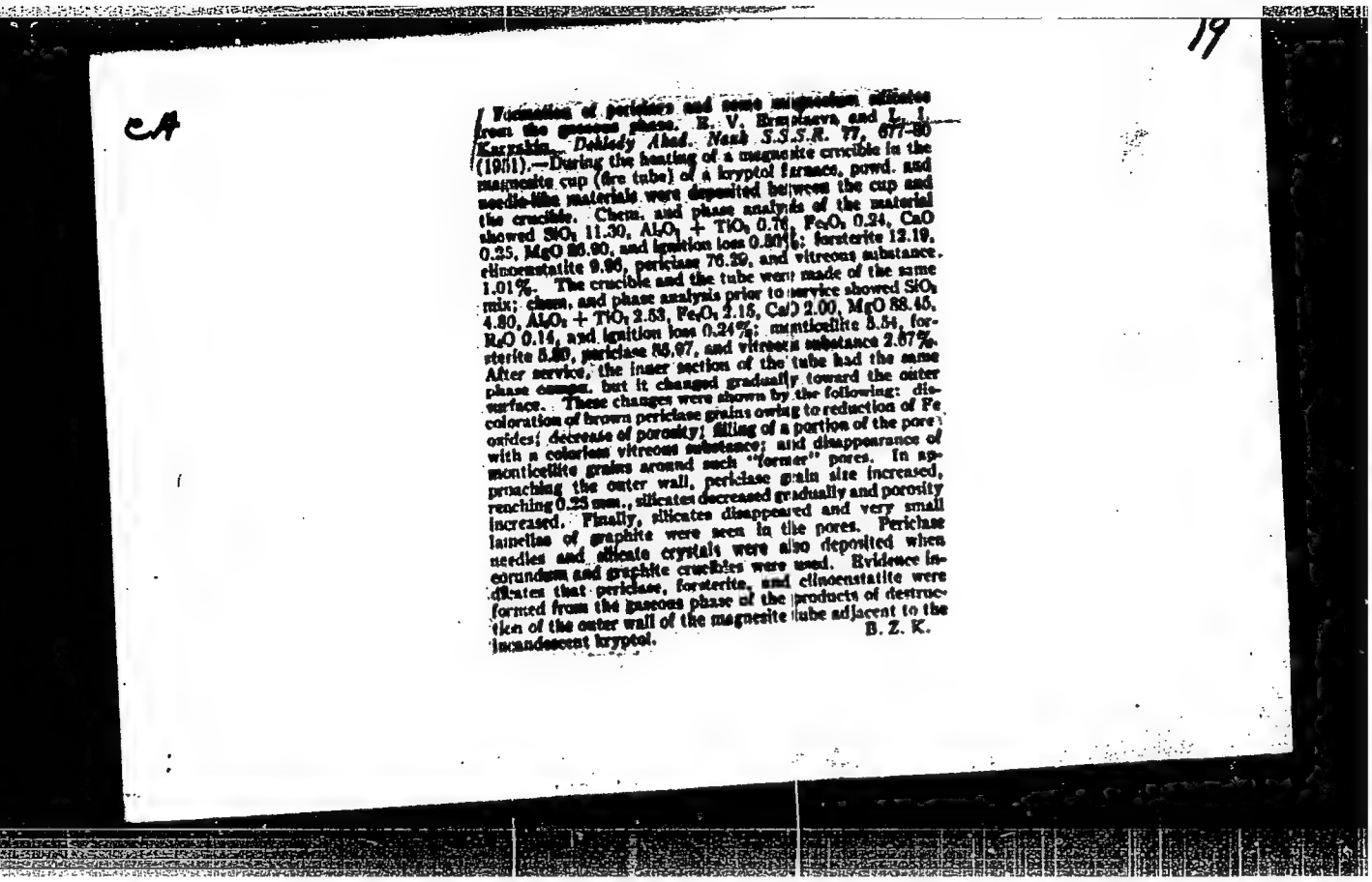
BCS

Ceramic Products
Refractories

372. Wear of silicon carbide tubes in the recuperators of continuous furnaces.—L. I. KARYAKIN and O. M. MARGULIS (*Ogneupory*, 16, 152, 1951). In one Russian plant heating air for continuous furnaces is by means of SiC recuperators of two types (I and II), 4 ft. 3 in. long and 6 in. dia. During service the tubes developed a slaggy surface. Tube I before use consisted of SiC and a bond. The SiC grains were angular and irregular in shape, <1·0 mm. or sometimes <2·5 mm., of a dark blue colour. Rarely, greenish and colourless grains were noted. The glaze formed during use consisted of glassy alumino-silicate containing alkali. "Icicles" from the tubes consisted of tridymite, fayalite, magnetite and glass; the shorter "icicles" were tridymite, whereas the long ones consisted mainly of fayalite. Within a single "icicle" the base was mainly tridymite whereas the peak was mainly fayalite. Tube II was a bright grey colour; the SiC grains were mostly colourless. Grain size varied from 0·05 to 1·1 mm., av. 0·1–0·4 mm. There were some individual quartz grains up to 0·5 mm. The surface after use was uneven, the bond having been corroded to a depth of 0·5 mm. The flux on Tube II was of conical shape and consisted of a brownish-grey porous glassy mass, N_D = 1·525–1·590, and 0·35 mm. SiC grains. The fluxed surface was covered with a dark greyish-brown glassy film. The above data show that the phase comp. of SiC tubes and of the fluxes formed on them are not the same. In the fluxes on Tube I the initial components—quartz and SiC—are absent, and there occur tridymite, fayalite and magnetite. Some explanation of these differences is offered. (2 figs., 2 tables.)

Bcs

1369. Crystallization of silica in very dense and super-silica bricks.—I. S. KAYNARSKY and L. I. KARYAKIN. (*Ogneupory*, 16, 461, 1951). The phase comp. of silica before and after service at high temps. is not governed by the temp. alone but depends also on the content of mineralisers present. In the absence of the latter, cristobalite predominates. In used bricks cristobalite that has formed in the region below its range of stability is stated to be crystallised mainly in the isotropic form (meta-cristobalite) and that formed within the stability region in the anisotropic form of β-cristobalite. Not much tridymite develops during the firing of silica with a low content of mineralisers; later, in service at temps. within its stability range, the individual tridymite crystals grow but the total amount of tridymite does not greatly increase. The long life of very dense high-SiO_2 bricks in the roof of an O.-H. furnace is attributed to the high proportion of SiO_2 present per unit vol. It is concluded that a reduction in the amount of mineralisers and in the porosity are the most important factors for changing the mineralogical comp. of silica bricks before and during service in order to increase their life in O.-H. roofs. (8 figs., 3 tables.)

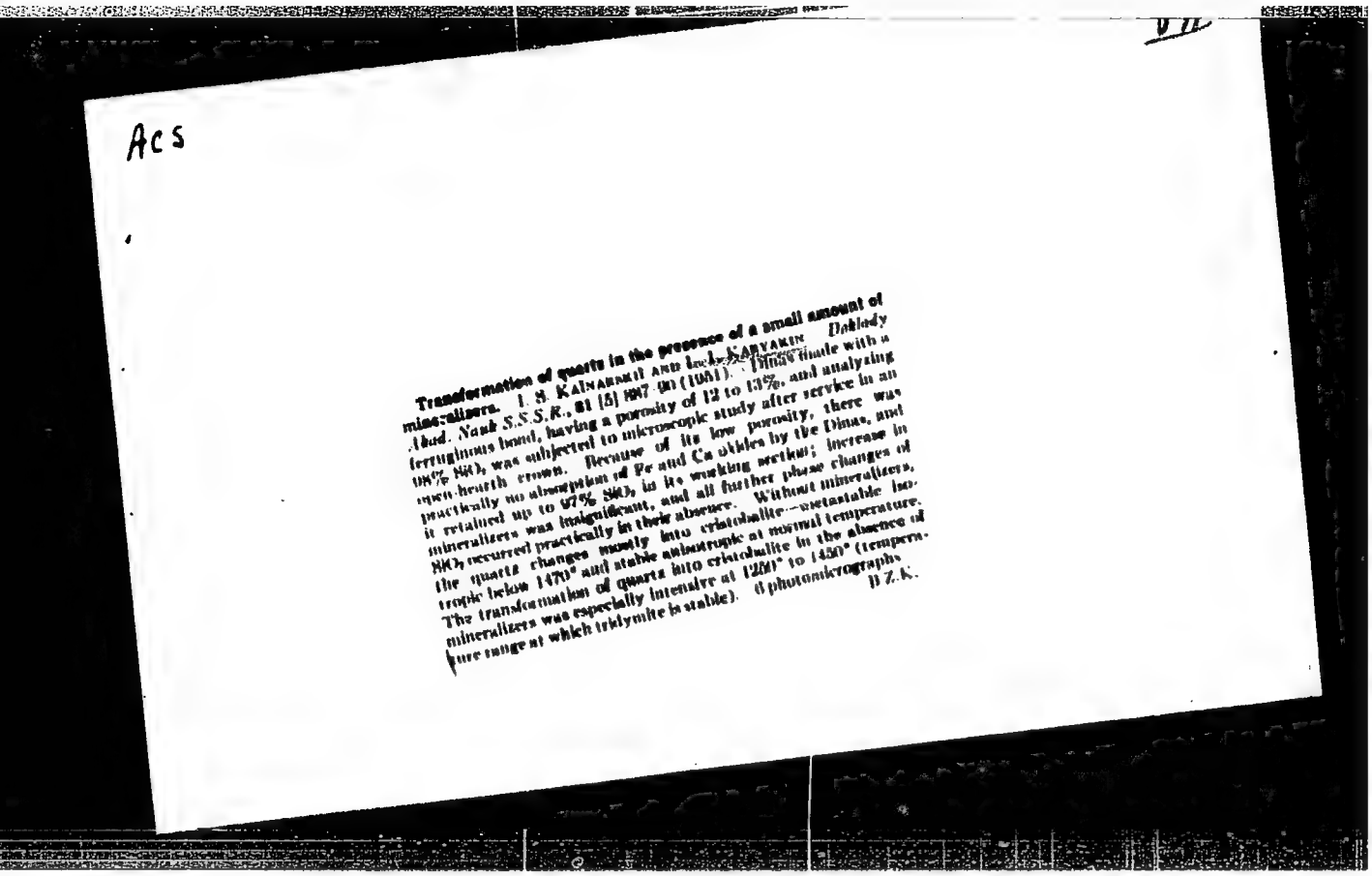


CA

19

Formation of periclase and some magnesium silicates from the gaseous phase. E. V. Ermakova and L. I. Kazakin. *Doklady Akad. Nauk S.S.S.R.* 77, 677–80 (1951).—During the heating of a magnesite crucible in the magnesite cup (fire tube) of a kryptol furnace, powd. and needle-like materials were deposited between the cup and the crucible. Chem. and phase analysis of the material showed SiO_2 11.30, Al_2O_3 + TiO_2 0.76, Fe_2O_3 0.24, CaO 0.25, MgO 86.90, and ignition loss 0.80%; forsterite 12.19, clinoenstatite 9.96, periclase 76.29, and vitreous substance 1.01%. The crucible and the tube were made of the same mix; chem. and phase analysis prior to service showed SiO_2 4.80, Al_2O_3 + TiO_2 2.53, Fe_2O_3 2.15, CaO 2.00, MgO 88.45, R_2O 0.14, and ignition loss 0.24%; monticellite 5.54, forsterite 5.80, periclase 86.97, and vitreous substance 2.67%. After service, the inner section of the tube had the same phase compn. but it changed gradually toward the outer surface. These changes were shown by the following: discoloration of brown periclase grains owing to reduction of Fe oxides; decrease of porosity; filling of a portion of the pores with a colorless vitreous substance; and disappearance of monticellite grains around such "former" pores. In approaching the outer wall, periclase grain size increased, reaching 0.25 mm., silicates decreased gradually and porosity increased. Finally, silicates disappeared and very small lamellae of graphite were seen in the pores. Periclase needles and silicate crystals were also deposited when corundum and graphite crucibles were used. Evidence indicates that periclase, forsterite, and clinoenstatite were formed from the gaseous phase of the products of destruction of the outer wall of the magnesite tube adjacent to the incandescent kryptol.

B. Z. K.



Acs

Transformation of quartz in the presence of a small amount of mineralizers. I. S. KAINARSKII AND L. L. KARYAKIN. *Doklady Akad. Nauk S.S.S.R.*, 81 [5] 807–9 (1951). This flume with a ferruginous bond, having a porosity of 12 to 13%, and analyzing 98% SiO_2, was subjected to microscopic study after service in an open-hearth crown. Because of its low porosity, there was practically no absorption of Fe and Ca oxides by the Dinas, and it retained up to 97% SiO_2 in its working section; increase in mineralizers was insignificant, and all further phase changes of SiO_2 occurred practically in their absence. Without mineralizers, the quartz changes mostly into cristobalite—metastable iso-tropic below 1470° and stable anisotropic at normal temperature. The transformation of quartz into cristobalite in the absence of mineralizers was especially intensive at 1200° to 1450° (tempera-ture range at which tridymite is stable). 6 photomicrographs. B. Z. K.

KARYAKIN, L. I.

USSR/Engineering - Refractories, Structure Mar 52

"On the Structure and Properties of the $MgO-ZrO_2-SiO_2$ System," A. S. Berezhnoy, L. I. Karyakin, Professors, Khar'kov Inst of Refractories.

"Ogneupory" No 3, pp 111-124

Clarifies physicochem and some tech features of $MgO-ZrO_2-SiO_2$ system with purpose of finding expedient ways for its practical use. Defines phases of system in equil, constructs diagram of fusibility and outlines possible phase diagram.

204T24

KARYAKIN, L. I., Prof.

USSR/Engineering - Refractories, Structure — May 52

"On Structure and Properties of $MgO-ZrO_2-SiO_2$ System," Prof A. S. Berezhnoy, Prof L.I. Karyakin, Khar'kov Inst of Refractories

"Ogneupory" No 5, pp 211-221

Presents systematic investigation of solid phase reactions in $MgO-ZrO_2-SiO_2$ system and sintering capacity of materials within this system. Discusses tabulated results in detail.

220T39

BEREZHNOY, A.S.; KARYAKIN, L.I.

Structure and properties of the system $MgO-ZrO_2-SiO_2$. Phases in equilibrium and fusibility diagram of the system. Ogneupory 17, 111-24 '52. (MLRA 5:3)
(CA 47 no.19:9744 '53)

1. Kharkov Inst. Refractories.

KARYAKIN, L. I.

(3) Chem

V Structure and properties of the system MgO-ZrO_2-SiO_2.
II. Reactions in the solid phase and refractive capacity in the system. A. S. Berezhnoi and L. I. Karyakin (Kharkov Inst. Refractories). *Ogneupory* 17, 21-31(1952).—Study of reactions in the solid phases indicates that the absorption of MgO into solid soln. by the ZrO_2 is a gradual process. The reaction of displacement of ZrO_2 with MgO in the zircon proceeds with great speed. Reaction between clinoenstatite and ZrO_2 should proceed according to $2MgSiO_3 + ZrO_2 \rightarrow Mg_2SiO_4 + ZrSiO_4$. During the formation of zircon an intens[illegible]morphization of quartz was observed. The reactions in the solid phase begin at the following approx. temps.: (a) absorption of MgO by ZrO_2 in solid soln. at 1050–1100°, (b) displacement of ZrO_2 in zircon by MgO at 650–700°, (c) formation of zircon at 1100°, and (d) reaction of ZrO_2 with $MgSiO_3$ at 1050°. A characteristic of this system, which includes oxides with an octuple coördination of the cation (ZrO_2), is the absence of solid solns. of the oxide in magnesia silicates. B. Z. Kamich

8-31-53

KARYAKIN, L. I.

USSR/Chemistry - Silicon Compounds, 21 Mar 52
Refractories

"The System Cu_2O - SiO_2 and the Existence of Anhydrous Copper Silicates," A. S. Berezhnoy, L. I. Karyakin, I. Ye. Dudavskiy, All-Union Sci Res Inst of Refractories.

"Dok Ak Nauk SSSR" Vol 83, No 3, pp 399 - 401

The system Cu_2O - SiO_2 was studied. The preps were subjected to microscopic, X-ray and chem exams. It was found that the mix forms 2 types of glass: one contg about 5% Cu_2O and the other 60-65% Cu_2O. A mp curve and a phase diagram were constructed. The mp of the mix (which does not form a solid soln) remains below that of SiO_2. No anhydrous chem compds are formed in the systems Cu_2O-SiO_2 or Cu_2O-SiO_2. The results agree with those obtained in the operation of Cu smelters and in connection with the use of dinas. Presented by Acad D. S. Belyankin 22 Jan 1952.

227T3

KARYAKIN, L. I.

Transformation of quartz into tridymite. L. I. Karyakin and L. I. Karyakina. *Doklady Akad. Nauk S.S.S.R.* 80 [1] 137–40 [1951]. — Mixtures of 60% unground quartz grains (80% 0.5 to 0.2 mm. and 50% 0.2 to 0.1 mm.) and 40% ground quartz grains (< 80μ), together with mineralizers ($Ca(OH)_2$, Mn oxides, iron dross, alumina), were pressed into briquettes at 250 kg./cm.²; the briquettes were fired, held for 50 hr. at 1400°C., and examined under the microscope. In most cases, the quartz grains were divided by a network of microscopic cracks into individual fragments. The grains were usually surrounded by isotropic fringes. These fringes are partially the product of direct inversion of quartz into metastable externally structureless cristobalite (colorless zone of inversion) and partially the product of the subsequent interaction of metacristobalite with the mineralizer (colored reaction zone). The transformation can be regarded as proceeding in two phases: (1) inversion of quartz at high temperature into metastable externally structureless cristobalite, which proceeds most intensively on the surface of quartz grains and along cracks, and (2) change of metacristobalite into tridymite in the presence of mineralizers. The mineralizers and SiO_2 form a liquid phase, which dissolves the highly disperse metacristobalite; supersaturation of the melt with SiO_2 results in the formation of tridymite crystallization centers. The most important characteristics of the liquid phase in this process are viscosity and wetting power. In general, viscosity drops with decrease of SiO_2 and Al_2O_3. Increased wetting of [illegible] favored by the presence of nonvitreous cations, the effect being greater, the less the radius of the ion and the greater its charge. The following scheme is suggested:

β-quartz (silica + mineralizer)
↓
α-quartz
↓
metacristobalite → (silicate melt) → α-tridymite

3 figures, 8 references.

B.Z.K.

KHARYAKIN, L. I.

3000

Crystallization of silica from the gas phase. L. I. Karyakin and I. S. Kulaevskii. *Doklady Akad. Nauk SSSR* 85, 617–20(1952).—A dense and solid pit, in the form of relatively coarse oölites was noted on the surface of light-weight SiO_2 brick made by incorporating 30% coke and firing at 1410° for 24 hrs. Genesis of the deposit is caused by reaction of finely divided coke and SiO_2 on long heating at high temp. according to $SiO_2 + C = SiO + CO$. The sub-oxide has a high vapor pressure. The CO diffuses out and is carried away by the oven gases, while SiO is oxidized by them and deposited on the surface of the brick in the form of pins that grow and form spheres of different diam., giving the oölitic appearance.

V. N. Hetmanski

(1)

KARYAKIN, L. I.

USSR

Chemical-mineralogical studies on acidic settling sinters of open-hearth furnaces. I. S. Kalnarskii and L. I. Karyakin. *Voprosy Petrog. i Mineral., Akad. Nauk S.S.S.R.* 2, 330–41(1953).—Sands from Lyubertsk and Millerovsk are examd. in different forms of settling soles for the open hearth. A characteristic zoning is observed: (*a*) an obsidian-like, entirely glassy product contg. 97.5% SiO_2; (*b*) densely sintered, zonal glass layers, partly highly silicous, but devitrified to cristobalite and high in open pores; (*c*) entirely "exhausted" sand sinter, impregnated with fayalite, hustamite, magnetite, some α-$CaSiO_3$, etc. Open porosity in (*b*) is particularly important because the aggressive melts easily penetrate into the settling sole by these pores and cracks. SiO_2 glass generally shows such an open porosity, increasing with increasing devitrification to cristobalite, although the glass had initially no porosity at all. Entirely slagged settling sinters with only 71% SiO_2 contain much less cristobalite but more magnetite, fayalite, and hustamite, derived from the open-hearth slag. An extensive description is given of the minerals observed in the sand sinters mentioned above. Residual quartz and occasional tridymite (with characteristic twins) have the normal physiographic properties, but cristobalite is distinguished in 4 morphological modifications: as a scaly, an acicular, and an irregularly aggregated "metacristobalite" (cf. D. S. Belyankin and N. G. Kazuakovii, *C.A.* 32, 5169[1]). Excellent paramorphs of cristobalite after quartz and tridymite are observed.

W. Bitel

KARYAKIN, L.I., prof., doktor geologo-mineral.nauk; ROYZEN, A.I., kand.tekhn. nauk

Changes in the phase composition of magnesite linings after service in furnaces. Ogneupory 19 no.5:217-222 '54. (MIRA 11:8)

1.Khar'kovskiy institut ogneuprov.
(Firebrick--Testing) (Metallurgical furnaces--Maintenance and repair)

KARYAKIN, L. I.

3

USSR.

Formation of rounded aggregates from gaseous phases. L. I. Karyakin and I. S. Kaz'menskii. Zapiski Vsesoyuz. Mineralog. Obshchestva 83, 242-5(1954).—By the heterogeneous gas reaction of SiO_2 with reducing flame gases, in which SiO is formed as intermediate product, at 1410°, a deposition of cristobalite on the refractory linings of an industrial furnace was observed. It shows characteristic club-shaped, rounded, or flattened structures, and fibrils of a peculiar development. Most of the material is β-cristobalite, and some SiO_2 glass (lechatelierite); evidently, the cristobalite is crystd. from this glass. Often spherulitic aggregates and "clubs" show in the central parts transparent, in the exterior layers a white-opaque and porous, cristobalite. The n of glass is 1.460, of the cristobalite γ = 1.487; α = 1.484. The genesis of the SiO_2 deposits is typically pneumatogenic. W. Eitel

A-U Sci Res Inst Refractories

KARYAKIN, L.I.

Occurrence of spits on the northern shore line of the Azov Sea.
Izv.Vses.geog.ob-va 86 no.1:75-79 Ja-F '54. (MLRA 7:2)
(Azov Sea--Shore lines) (Shore lines--Azov Sea)

Karyakin, L. I.

Genesis of cuspidine and the minerals of the humite group. L. I. KARYAKIN AND N. V. GUL'KO. *Doklady Akad. Nauk S.S.S.R.*, 94, 681–84 (1954); *Chem. Abstr.*, 49 [1] 107e (1955). — Berezhnoi (*Doposidi Akad. Nauk Ukr. R.S.R.*, 1951, No. 1) observed the formation of complex F silicates on the walls of a MgO crucible if a mixture of quartz and CaF_2 was heated in it. K. and G. identified, as newly formed products, cuspidine ($3CaO \cdot 2SiO_2 \cdot CaF_2$), norbergite ($Mg_3SiO_4 \cdot MgF_2$), chondrodite, and humite. The chemical reactions are characterized by the evolution of SiF_4 from the quartz + CaF_2 mixture, which changed MgO to minerals of the humite group and caused the crystallization of cuspidine above 1200° to 1350°C. The reaction products on the crucible walls show a distinct zoning, and the mineralogical composition of the zones is given in percentages from microscopic measurements. The optical properties of the complex F silicates observed are the normal ones known from rocks. Among the orthosilicates, forsterite is rarely observed, but monticellite rather frequently. Sellaite (MgF_2) is entirely absent. Wollastonite and pseudowollastonite are abundant in the Ca silicate parts of the samples. From a practical standpoint it is evident that periclase crucibles are unsuitable for batches or slags containing CaF_2.

KARYAKIN L.I.

USSR

Changes in the optical properties of serpentine by heating. O. P. Mchedlov-Petrosyan, L. I. Karyakin, and G. M. Smirnov (S. M. Kirov Inst. Engineers of Railroad Transport, Kharkov). *Doklady Akad. Nauk S.S.S.R.* 96, 817–20 (1954).—The structural analogy between antigorite and kaolinite (on its dehydration (Belyankin and Feodot'ev, *C.A.* 45, 7477*i*)) makes the optical investigation of the dehydration products of serpentine highly suggestive. The serpentinite from Tsnelisakli (Georgian S.S.R.) is a mixt. of chrysotile and antigorite. This and a gem serpentine (chiefly antigorite) were taken as starting materials. While kaolinite entirely loses its birefringence in the meta-phase, the birefringence of fired serpentines is always marked. In the temp. range of rapid dehydration (500° to 600° for the common serpentine, 550° to 700° for the gem material) the *ns* decrease, with a min. at 600° for the common serpentine, but rapidly increased beyond 600° in both minerals. Intermediate phases (if they exist) must be ephemeral. Apparently, the antigorite tables in the gem serpentine are changed to a fibrous product of chrysotile-like aspect. The authors conclude that the first, intermediate phase with decreased *ns* is a Mg silicate with some OH groups still preserved in the structure. The x-ray powder diagrams given for the gem serpentine, heated to 600° (for 2 and 5 hrs.), 670° (for 2 and 5 hrs.), and 760° (for 0 hrs.) show even at the highest temps. not one strong line indicative for olivine. The intermediate phase is, therefore, a different silicate, at least stable in the interval between 600° and 800°. Only after the complete dehydration (above 800°) do the *ns* distinctly increase. W. Eitel

KARYAKIN, L.I.

USSR /Chemical Technology. Chemical Products and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31575

Author : Karyakin L.I., Kaynarskiy I.S.

Title : Performance of Dinas Brick in a Tank Furnace for the Production of Heat-Resistant Glass

Orig Pub: Ogneupory, 1955, No 4, 159-165

Abstract: Data are reported on chemical and mineralogical composition of Dinas bricks (D) A and B, taken, respectively, from the burner vaults and the skewback of melting compartment of a continuous operation tank furnace, after 16 months of operation. The furnace was used to produce alkali-free alumo-borosilicate glass (ABG); air preheating

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temperature was 800-900°, temperature in working area, within the zone of flame, was 1550-1590°. The slight wear of the investigated D in the upper structure of the furnace (10-30 mm) and the experimental use in this furnace, in lieu of vitrified quartz blocks, of ordinary D at individual portions of the tank, support the assumption that in lining the walls and bottom of the melting portion of the tank, for the production of ABG, it is advantageous to use special, high-density, high-silica content D, in lieu of vitrified quartz blocks.

15-1957-10-14100

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 10, p 116 (USSR)

AUTHORS: Karyakin, L. I., Pyatikop, P. D.

TITLE: The Formation of Magnesian Spinel From Chromite When Heated in a Reducing Environment (Obrazovaniye magnezial'noy shpineli iz khromita pri nagrevanii v vosstanovitel'noy srede)

PERIODICAL: Mineralog. sb. L'vovsk. geol. o-va pri un-te, 1955, Nr 9, pp 246-259

ABSTRACT: Cylinders of chrome spinel from the chromite ores of the Saranovskoye and Kempirsayskoye deposits, formed under pressures of 1000 kg/cm^2, were heated in a coking-gas atmosphere at a temperature of 1400 to 1700°; the temperature was raised at the rate of 250°/hour. As a result, the oxides of chromium and iron were reduced to metals. In this process the chrome spinel was enriched in MgO and Al_2O_3 and there occurred a transition from the colorless or slightly tinted Fe_2O_3 and Cr_2O_3 to the

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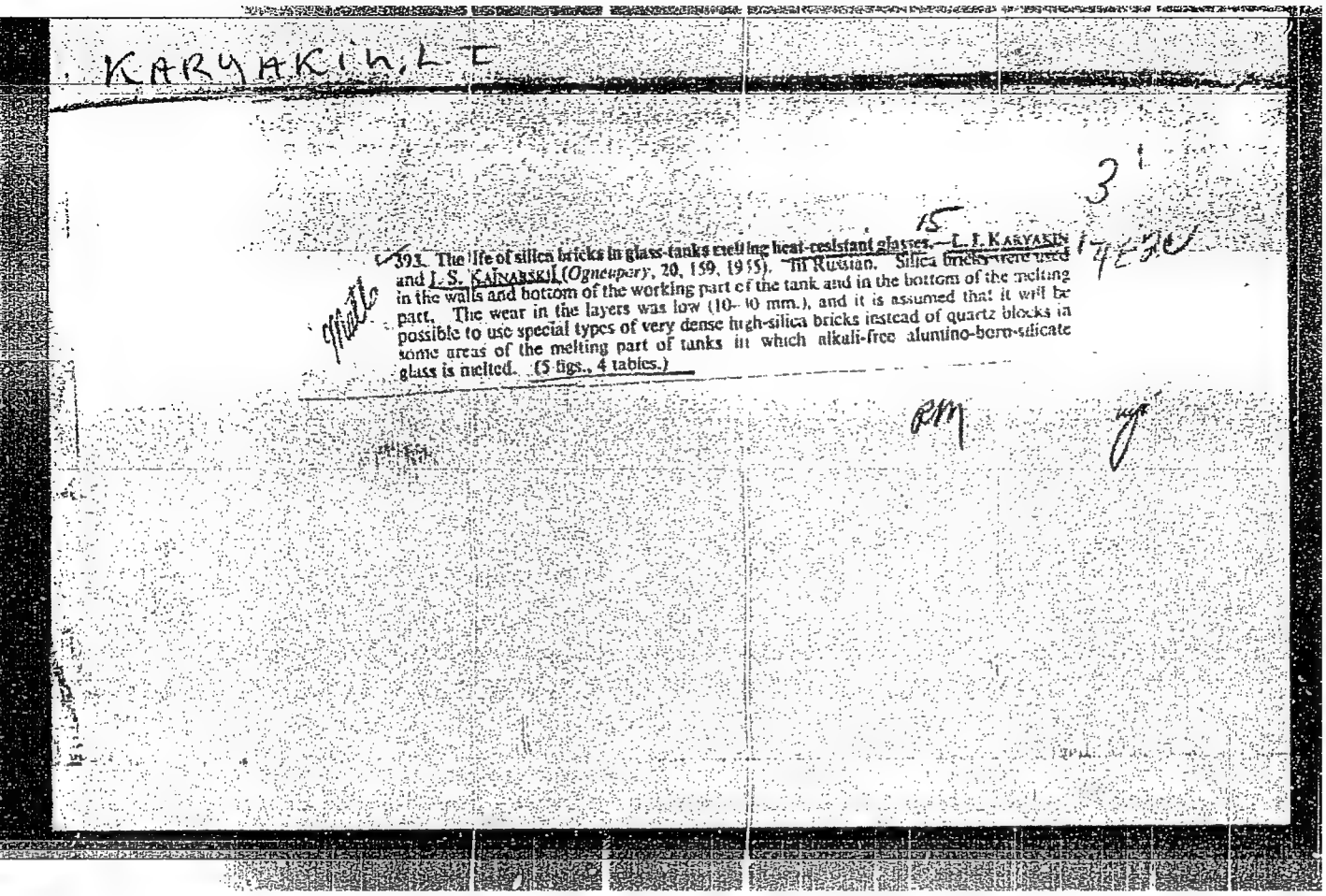
Khar'kov, All Sci Res Inst Refractories



KARYAKIN, L. F.

393. The life of silica bricks in glass-tanks melting heat-resistant glasses.—L. F. KARYAKIN and I. S. KAPLANSKII (*Ogneupory*, 20, 159, 1955). In Russian. Silica bricks were used in the walls and bottom of the working part of the tank and in the bottom of the melting part. The wear in the layers was low (10–40 mm.), and it is assumed that it will be possible to use special types of very dense high-silica bricks instead of quartz blocks in some areas of the melting part of tanks in which alkali-free alumino-boro-silicate glass is melted. (5 figs., 4 tables.)

KARYAKIN, L. I.

Sorption properties and mineralogical compositions of flinty-argillaceous rocks of the Khar'kov formation. S. G. Teletov, L. A. Luk'yanchenko, and L. I. Karyakin (A. M. Gor'kii State Univ., Khar'kov). Ukrain. Khim. Zhur. 21, 269-73(1955).—C.H. vapors were sorbed and methylene blue was adsorbed by the following mineral fractions: sandy diatomite (I), diatomite (II), molten rocks (III), glauconitic clay (IV), and Kiev top-clay (V), all of which were analyzed for grain size and for the percentage compn. of quartz, feldspar, glauconite, muscovite, amorphous SiO_2 (VI), clay minerals (VII), limonite, calcite shells of diatomeae (VIII), and the quartz needles from sponges. It is obvious that the sorptive properties depend upon the mineral compn. of the various rocks, and any grain size below 0.01 mm. shows the highest adsorption powers. In every one of the 5 rocks certain minerals are more adsorbing than others, these are for I and II: the VI and VIII; for III; the IV; for IV: the VI and the montmorillonite (IX) from the VII; for V: the IX. All these various components show a different polarity, i.e. charge on the surface, which explains that the rocks adsorb such a variety of materials.

Werner Jacolson

(2)

KARYAKIN, L.I.

BEREZHNOY, A.S.; KARYAKIN, L.I.

System: Cu_2O - SiO_2 and CuO_2. TSvet.met. 28 no.2:26-33 Mr-Ap '55.
(Copper oxides) (Silicon oxides)

KARYAKIN, L.I.; PYATIKOP, P.D.

Thermal scourging. Zap.Vses.min.ob-va 84 no.4:459-461 '55.
(MLRA 9:2)
1.Vsesoyuznyy Nauchno-issledovatel'skiy institut ogneuporov, Khar'kov.
(Mineralogy)

KARYAKIN, L.I.

Changes of chromium spinels by thermal treatment. L. I. Karyakin and P. D. Pyatikop (All-Union Sci. Research Inst. Refractory Materials, Kharkov). *Doklady Akad. Nauk S.S.S.R.* 102, 601–3(1955).—Unmixing processes in Cr spinels are studied by metallographic methods, with a special thermal etching method (oxidation at 600° to 650° of polished samples for 5 to 8 min.). The samples were Cr spinels from Kempirsaisk and Saranov, with 61.4% and 46.2% Cr_2O_3; 11.4% and 17.3% Al_2O_3; 0 and 10% Fe_2O_3; 12.5 and 13.3% FeO, resp. Acicular forms of magnetite pseudomorphs after hematite are observed in max. amts. at 1400°; at 1600° the Fe oxides are less developed, and at still higher temps. homogeneous solid solns. are formed, i.e., a reorganization of Cr spinels. Very remarkable is the appearance of magnetite which is changed by heating above 220° to maghemite, which is converted to hematite above 630°, but forms again by partial dissocn. at 700° to 1400° a maghemite phase, and above 1400° magnetite. In the presence of MgO or Mg silicates no hematite or maghemite is formed, but magnesioferrite, or the highly mobile Fe ions enter the silicate phases.

W. Eitel

(1)

15-1957-10-14116

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 10, p 120 (USSR)

AUTHORS: Karyakin, L. I., Nekrich, M. I.

TITLE: The Petrography of Blast-Furnace Slags and of Castings Made From Them (K petrografii domennykh shlakov i lit'ya iz nikh)

PERIODICAL: Sb. nauchn. rabot po khimii i tekhnol. silikatov. Moscow, Promstroyizdat, 1956, pp 138-143

ABSTRACT: The authors describe an experiment in using blast-furnace slag from factories in the southern USSR as material for manufacturing pipe. The slag used was inhomogeneous in outward appearance: greenish and gray with intermediate gradations. The principal minerals of the greenish-gray slag are melilite (38%) and glaucochroite (39%). The optical properties of these two minerals are given. The sulfides--represented by oldhamite, CaS, and alabandite, MnS--make up 8%. Glass forms 14 to 15%. The gray slag has the same general composition,

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but it contains more melilite (42%) and brown glassy material (24.7%). The slags melted at 1500°. The fused mass was either poured out into a stationary earthen mold or fashioned in a centrifuge. After firing, part of the pipe had fractures, which were produced by unequal crystallization. It was shown that the black parts, consisting of 70% glass with grains of melilite distributed irregularly through it, are the most brittle. The gray parts have less glass, with regularly distributed crystals of melilite in it, and are stronger. To improve the quality of the castings, the authors recommend the development of a method of firing during which material may be added.

Card 2/2

N. N. Kurtseva

15-1957-10-14122

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 10, p 121 (USSR)

AUTHOR: Karyakin, L. I.

TITLE: The Petrography of Bricks and Tiles (K petrografii kirpicha i cherepitsy)

PERIODICAL: Sb. nauch. rabot po khimii i tekhnol. silikatov. Moscow, Promstroyizdat, 1956, pp 311-316

ABSTRACT: Studies were made on red building-bricks and tiles, made at the second ceramic factory in Khar'kov. The bricks were made of loess-formed and fresh-water sandy clays, the tiles of Kiyevskiy marl. The mechanical composition and the chemical content are given for the material studied. Microscopic examination of the bricks and tiles showed that coarse grains of quartz and feldspar and large plates of muscovite undergo only a slight change when heated in the kiln at 900° to 1000°. The colloidal-dispersed minerals of clay, calcite, glauconite, and the fine grains of quartz, felspar, opal, and others are de-

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